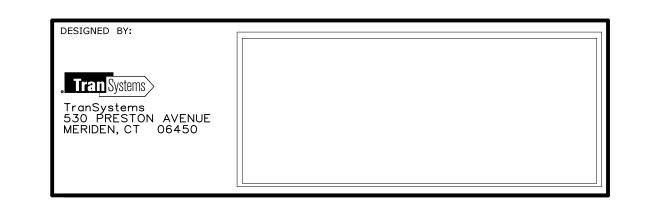
# 12 - STRUCTURAL

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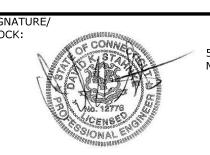
DESIGNER/DRAFTER:

C DONOHUE

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Tran Systems

530 PRESTON AVENUE
MERIDEN, CT 06450

NEW HAVEN - HARTFORD SPRINGFIELD RAIL CORRIDOR

TOWN:	BERL	[N
DRAWING	TITLE:	
	<b>DRAWING</b>	<b>INDEX</b>

PROJECT NO.

170-3155

DRAWING NO.

STI-001

SHEET NO.

01.12.001

#### **DESIGN CRITERIA**

DC-1 BUILDING CODES AND SPECIFICATIONS: A. CONNECTICUT STATE BUILDING CODE, 2005, WITH 2009 AMENDMENT B. INTERNATIONAL CODE COUNCIL (ICC), 2003 INTERNATIONAL BUILDING CODE C. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE), MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCÉ 7-02 D. STATE OF CONNECTICUT DEPT. OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 816, 2004 E. AMTRAK STANDARD TRACK PLAN FOR MINIMUM ROADWAY CLEARANCE, AM 70050-G F. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 1. ALLOWABLE STEEL DESIGN, THIRTEENTH EDITION . AISC-341 SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS 3. AISC SPECIFICATIONS FOR THE DESIGN OF STEEL HOLLOW STRUCTURAL SECTIONS, APRIL 1997 G. AMERICAN CONCRETE INSTITUTE (ACI), BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318-08 H. AMERICAN WELDING SOCIETY (AWS) 1. STRUCTURAL WELDING CODE AWS D1.1 2. STRUCTURAL WELDING CODE AWS D1.8 I. AMERICAN INSTITUTE OF TIMBER CONSTRUCTION, AITC, "TIMBER CONSTRUCTION MANUAL" (LATEST EDITION), INCLUDING "CODE OF STANDARD PRACTICE, AITC 106" J. NATIONAL FOREST PRODUCTS ASSOCIATION, NFPA, "NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION" (LATEST EDITION) DC-2 DESIGN LOADS CRITERIA: A. LIVE LOADS 1. ROOF 30 PSF MINIMUM 2. PLATFORM 150 PSF 3. STAIRS, RAMPS & LANDINGS 100 PSF 4. FLOOR & PEDESTRIAN BRIDGE 100 PSF B. SNOW LOADS 1. GROUND SNOW LOAD (Pg) 30 PSF 2. ROOF SNOW LOAD(Pf) 30 PSF (CONNECTICUT MIN.) 3. SNOW IMPORTANCE FACTOR (Is) 1.0 0.9 4. SNOW EXPOSURE FACTOR (Ce) C. CONSTRUCTION LOADS (NOT TO EXCEED DESIGN LIVE LOADS) D. WIND DESIGN CRITERIA 1. BASIC WIND SPEED FOR 3 SEC GUSTS(V) 100 MPH 2. WIND IMPORTANCE FACTOR (IW) 1.0 3. EXPOSURE CATEGORY E. SEISMIC DESIGN CRITERIA SEISMIC IMPORTANCE FACTOR (Ie) 1.0 2. SITE CLASS E 3. MAPPED SPECTRAL RESPONSE ACCELATION, SHORT PERIOD (Ss) 0.281 4. MAPPED SPECTRAL RESPONSE ACCELATION AT 1 SECOND (S1) 0.085 5. SPECTRAL RESPONSE COEFFICIENT AT SHORT PERIOD (Sds) 0.450 6. SPECTRAL RESPONSE COEFFICIENT AT 1 SECOND (Sd1) 0.198 SEISMIC DESIGN CATEGORY 8. BASIC SEISMIC FORCE RESISTING SYSTEM - STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE 9. DESIGN BASE SHEAR 22 KIPS 10. SEISMIC RESPONSE COEFFICIENT (Cs) 0.088 11. RESPONSE MODIFICATION FACTOR (R) 3.5 12. ANALYSIS PROCEDURE USED IS EQUIVALENT LATERAL FORCE PROCEDURE F. FLOOD LOAD - NOT APPLICABLE DC-3 FOUNDATION DESIGN CRITERIA: A. FOUNDATION DESIGN IS BASED UPON THE FOLLOWING SOIL PARAMETERS: 1. NET ALLOWABLE SOIL BEARING PRESSURE: A. SPREAD OR CONTINUOUS FOOTINGS 4000 PSF B. LATERAL EARTH PRESSURE PARAMETERS: 1. SOIL DENSITY 115 PCF 2. COEFFICIENT OF ACTIVE PRESSURE (Ka) 0.38 3. COEFFICIENT OF AT-REST PRESSURE (Ko) 0.55 4. COEFFICIENT OF PASSIVE EARTH PRESSURE (Kp) 5. ANGLE OF INTERNAL FRICTION (phi) 27 DEGREES 6. COEFFICIENT OF FRICTION 0.30 7. MODULUS OF SUB-GRADE REACTION (ks) 100 PCI C. FROST DEPTH 42" (CONNECTICUT MIN.) DC-4 MATERIALS: THE FOLLOWING ASTM DESIGN STANDARDS AND STRESSES SHALL BE THE APPROPRIATE MATERIALS USED FOR THIS PROJECT: A. CEMENT: ASTM C150 TYPE I OR III ASTM C150 TYPE II (CONCRETE IN CONTACT WITH EARTH) B. CONCRETE - MINIMUM COMPRESSIVE STRENGTH (f'c) AT 28 DAYS FOR NORMAL WEIGHT CONCRETE, UON: 1. FOOTINGS, WALLS, PIERS & SLABS 4000 PSI 2. PRECAST MEMBERS 5000 PSI C. NON-SHRINK LEVELING GROUT ASTM C1107, f'c= 5000 PSI AT 28 DAYS D. REINFORCEMENT: L. DEFORMED BARS ASTM A615, GRADE 60 2. WELDED WIRE FABRIC ASTM A884 3. EPOXY COATED BARS ASTM A775 E. STEEL: ASTM A992 1. STRUCTURAL STEEL WIDE FLANGE & T-SECTIONS 2. STRUCTURAL ANGLES, CHANNELS AND PLATES ASTM A36 3. BASE PLATES ASTM A572, GRADE 50 ASTM A500, GRADE B 4. HOLLOW STRUCTURAL SECTIONS 5. STRUCTURAL STEEL PIPE ASTM A53, GRADE B 6. HIGH STRENGTH BOLTS ASTM A325-N OR -TC 7. ANCHOR RODS **ASTM F1554, GRADE 55** 8. HEADED SHEAR STUD ASTM A108 TYPE B 9. WELDING ELECTRODE AWS A5.1 OR A5.5 E70XX 10. STEEL DECK AND METAL STUDS ASTM A653 F. TIMBER: ALL SAWN LUMBER SHALL HAVE 19% MAX MOISTURE CONTENT AND SHALL BE SURFACE DRY HEM-FIR IN THE FOLLOWING GRADES: 1. JOISTS AND RAFTERS NO. 2 OR BETTER 2. MISC. FRAMING (BLOCKING, SILL PLATES, ETC.) STUD OR BETTER 3. PLYWOOD PANELS - PROVIDE APA PERFORMANCE RATED PANELS COMPLYING WITH THE INDICATED REQUIREMENTS FOR THICKNESS, SPAN RATING AND EDGE DETAIL.

#### **GENERAL**

- G-1 METHODS, PROCEDURES AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND IMPLEMENTING THE NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
- G-2 TEMPORARY BRACING, SHEETING, SHORING, ETC, REQUIRED TO ENSURE THE STRUCTURAL INTEGRÍTY/STABILÍTY OF THE EXISTING BUILDINGS, SIDEWALKS, UTILITIES, ETC, DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER EMPLOYED BY THE CONTRACTOR.
- G-3 IMPLEMENTATION OF JOB SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE
- G-4 SLEEVES OR BLOCK-OUTS REQUIRED FOR PASSAGE OF DUCTWORK, PIPING, DRAINS, CONDUIT, ETC, IN ADDITION TO ANCHORS AND HANGERS REQUIRED FOR EQUIPMENT AND PIPING AND UNDER-SLAB UTILITIES ARE NOT SPECIFICALLY NOR GENERALLY, INDICATED ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING SUCH REQUIREMENTS PRIOR TO FABRICATION OR ERECTION OF THE STRUCTURE. PENETRATIONS ARE SUBJECT TO APPROVAL BY THE STRUCTURAL ENGINEER OF RECORD.
- G-5 DIMENSIONS AND INSTALLATION DETAILS OF PURCHASED EQUIPMENT MUST BE VERIFIED AND COORDINATED WITH THE SUPPORTING STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING SUCH REQUIREMENTS FROM SUBCONTRACTORS AND EQUIPMENT SUPPLIERS ALONG WITH COORDINATING THE LOCATIONS AND DETAILS FOR THESE ITEMS PRIOR TO FABRICATION OR ERECTION OF THE SUPPORTING STRUCTURE. ANY CONFLICTS BETWEEN THESE ITEMS AND THE BUILDING STRUCTURE IS TO BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER OF RECORD FOR RESOLUTION.
- G-6 THE CONTRACTOR IS TO REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND DETAILS NOT PROVIDED.
- G-7 WORK NOT INDICATED ON A PART OF THE DRAWINGS, BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING LOCATIONS, IS TO BE REPEATED.
- G-8 EXISTING BUILDING INFORMATION SHOWN IS BASED UPON EXISTING BUILDING DOCUMENTS AND/OR FROM FIELD OBSERVATION. THE INFORMATION CONTAINED HEREIN MAY REQUIRE ADJUSTMENTS AND/OR MODIFICATIONS TO CONFORM TO EXISTING CONDITIONS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING BUILDING INFORMATION SHOWN (DIMENSIONS, ELEVATIONS, ETC) AND NOTIFY THE STRUCTURAL ENGINEER OF RECORD OF ANY DISCREPANCIES PRIOR TO FABRICATION OF ANY STRUCTURAL COMPONENT.
- G-9 DETAILS DESIGNATED AS "TYPICAL DETAILS," APPLY GENERALLY TO THE DRAWINGS IN AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE DESCRIBED IN THE DETAILS.
- G-10 SHOP DRAWINGS:
  - A. SHOP DRAWINGS FOR ALL MATERIALS ARE TO BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO THE START OF FABRICATION OR COMMENCEMENT OF WORK PER THE PROJECT SPECIFICATIONS.
  - B. SHOP DRAWINGS MUST BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION. THE CONTRACTOR'S STAMP OF APPROVAL WILL CONSTITUTE CERTIFICATION THAT THE CONTRACTOR HAS VERIFIED ALL FIELD MEASUREMENTS, CONSTRUCTION CRITERIA, MATERIALS AND SIMILAR DATA AND HAS CHECKED EACH DRAWING FOR COMPLETENESS, COORDINATION, AND COMPLIANCE WITH THE CONTRACT DOCÚMENTS.
  - C. REPRODUCTION OF ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR SUBMITTAL AS SHOP DRAWINGS IS PROHIBITED. D. CHANGES TO SHOP DRAWINGS THAT ARE RE-SUBMITTED MUST BE CLOUDED OR SOMEHOW INDICATE THAT A CHANGE HAS BEEN MADE TO
  - THE PREVIOUSLY ISSUED AND REVIEWED DRAWING. E. THE CONTRACTOR IS TO PROVIDE THE ENGINEER WITH WRITTEN NOTICE OF DEVIATIONS OF ANY TYPE FROM THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS. THE NOTICE MUST BE RECEIVED PRIOR TO SHOP DRAWING SUBMITTAL. THE CONTRACTOR REMAINS LIABLE FOR ANY DEVIATION UNLESS REVIEWED BY THE ENGINEER AND ACKNOWLEDGED IN
- G-11 AREAS OF EXCAVATION CONTAIN CONTAMINATED SOIL. REFER TO DWG. ENV-1 AS WELL AS ASSOCIATED SPECIFICATIONS FOR STOCKPILING, HANDLING, AND REMOVAL FROM SITE.

WRITING, PRIOR TO THE RECEIPT OF THE SHOP DRAWINGS.

G-12 WORK WHICH IS WITHIN THE INFLUENCE LINE OF THE TRACK OR WORK THAT IS WITHIN 50' OF THE TRACK CENTERLINE AND HAS THE POTENTIAL TO AFFECT TRACK STABILITY SHALL REQUIRE TRACK MONITORING. REFER TO THE SPECIAL PROVISION "TRACK MONITORING".

#### **FOUNDATIONS**

- F-1 FOUNDATIONS ARE TO BE PLACED ON 12' GRANULAR FILL COMFORMING TO THE REQUIREMENTS OF CONNDOT FORM 816 SECTION 2.14.
- F-2 ELEVATIONS SHOWN ON THE DRAWINGS AT WHICH FOUNDATIONS BEAR ARE APPROXIMATE AND MAY VARY TO SUIT SUBSURFACE SOIL CONDITIONS. ANY BOTTOM OF FOOTING ELEVATIONS AT FOOTING STEP LOCATIONS, SHOWN ON THE DRAWINGS, ARE TO BE FIELD VERIFIED AND ADJUSTED AS REQUIRED SO THAT FOUNDATIONS BEAR ON MATERIAL OF AT LEAST THE CAPACITY NOTED ABOVE.

#### **FOUNDATIONS (CONTINUED)**

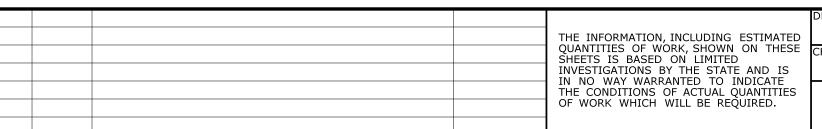
- F-3 PRIOR TO PLACING CONCRETE, ANY WATER PRESENT IS TO BE PUMPED OUT FROM THE BOTTOM OF EXCAVATIONS TO A LEVEL APPROVED BY THE GEOTECHNICAL ENGINEER.
- F-4 NO BACKFILLING AGAINST WALLS IS TO BE DONE UNTIL THE SLABS AT THE TOP AND BOTTOM HAVE BEEN PLACED OR ADEQUATE SHORING HAS BEEN PROVIDED. WALLS AND GRADE BEAMS HAVING BACKFILL AGAINST BOTH SIDES ARE TO HAVE BACKFILL PLACED ON BOTH SIDES SIMULTANEOUSLY.

#### REINFORCED CONCRETE

- C-1 MIXING, TRANSPORTING, PLACING AND TESTING OF CONCRETE IN ACCORDANCE WITH ACI 301.
- C-2 PRIOR TO CONCRETE PLACEMENT, THE CONTRACTOR MUST SUBMIT CONCRETE MIX DESIGNS FOR EACH TYPE OF CONCRETE TO BE USED, PREPARED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS TO STRUCTURAL ENGINEER OF RECORD FOR REVIEW.
- C-3 THE SLUMP AT POINT OF PLACEMENT IS NOT TO EXCEED 4"(+/-) 1" AND THE WATER/CEMENT RATIO IS NOT TO EXCEED 0.45. IF INCREASED SLUMP OF 8" IS DESIRED FOR PUMPING, A SUPER-PLASTICIZER ADMIXTURE MAY BE ADDED. A. AIR ENTRAINMENT: 4% TO 5% IN CONCRETE EXPOSED TO FREEZE/THAW.
- C-4 REINFORCEMENT IS TO BE DETAILED, FABRICATED, AND PLACED IN ACCORDANCE WITH THE ACI "DETAILING MANUAL NO. SP-66" (LATEST EDITION).
- C-5 PROVIDE ADEQUATE CONCRETE COVER IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH BY ACI 318.
- C-6 REINFORCEMENT IS TO BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS, STIRRUPS, OR CHAIRS WILL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL BARS WHERE NECESSARY DURING CONSTRUCTION.
- C-7 CONTINUOUS REINFORCING BARS TO BE TURNED AND LAPPED AT CORNERS AND INTERSECTIONS OF WALLS AND FOOTINGS. LAP SPLICES TO BE CLASS B TENSION SPLICES PER ACI 318. HOOKED BARS TO HAVE STANDARD ACI HOOKS UNO.
- C-8 CONTINUOUS TOP BARS TO BE SPLICED AT MID-SPAN. CONTINUOUS BOTTOM BARS TO BE SPLICED AT CENTERLINE OF SUPPORTS (OR AS SHOWN ON DETAILS).
- C-9 WELDED WIRE REINFORCEMENT IS TO BE SUPPLIED IN FLAT SHEETS ONLY. LAP WELDED WIRE REINFORCEMENT TWO FULL MESH LENGTHS (OR 6" MIN) AT SPLICES AND WIRE TOGETHER. WELDED WIRE REINFORCEMENT TO BE PLACED 1/4 TH THE SLAB THICKNESS FROM THE TOP OF SLABS, UON.
- C-10 SLEEVES, INSERTS, MECHANICAL OPENINGS, CONDUITS, PIPES, RECESSES DEPRESSIONS, CURBS AND OTHER EMBEDDED ITEMS TO BE PROVIDED FOR AS SHOWN ON THE ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND AS REQUIRED BY EQUIPMENT MANUFACTURERS. INSTALLATION OF THESE ITEMS TO BE COORDINATED AND PROVIDED FOR PRIOR TO PLACING CONCRETE.
- C-11 PROVIDE BLOCK-OUTS AS REQUIRED FOR PRE-CAST CONCRETE PANEL ANCHORAGE. FILL WITH CONCRETE ONCE PANEL IS IN PLACE.
- C-12 ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED  $\frac{1}{2}$ " X  $\frac{1}{2}$ " UNO.

## PRECAST CONCRETE

- PC-1 PRECAST CONCRETE UNITS MUST BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI) DESIGN HANDBOOK AND ACI 318 (LATEST EDITIONS).
- PC-2 PRECAST TO PRECAST AND PRECAST TO FOUNDATION CONNECTIONS, INCLUDING ANCHOR RODS, ARE TO BE DESIGNED AND DETAILED BY THE PRECAST MANUFACTURER, ALL LOOSE STEEL PLATES, CLIP ANGLES, SEAT BRACKETS AND ANGLES, ANCHORS, DOWELS, CLAMPS, HANGERS, AND OTHER MISCELLANEOUS STEEL SHAPES NECESSARY FOR INSTALLING AND SECURING PRECAST UNITS OR PANELS TO THE BUILDING STRUCTURAL SYSTEM MUST BE PROVIDED BY THE PRECAST MANUFACTURER.
- PC-3 PRIOR TO FABRICATION, THE PRECAST MANUFACTURER IS TO SUBMIT TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW THE FOLLOWING, PREPARED BY OR UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WHICH THE PROJECT IS CONSTRUCTED AND BEARING THE SEAL OF THE PROFESSIONAL ENGINEER:
  - A. DESIGN CALCULATIONS OF PRECAST UNITS, INTEGRATED SUPPORT MEMBERS AND CONNECTIONS.
  - B. SHOP DRAWINGS SHOWING ERECTION PLANS, DIMENSIONS, REINFORCING REQUIREMENTS, CONSTRUCTION DETAILS, DESIGN CRITERIA, LOAD CAPACITIES, OPENING SIZES AND LOCATIONS AND FOUNDATION LOADS.
- PC-4 SLEEVES, INSERTS, MECHANICAL OPENINGS, TROUGHS, CURBS AND OTHER EMBEDDED ITEMS TO BE PROVIDED FOR AS SHOWN ON THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND AS REQUIRED BY EQUIPMENT MANUFACTURERS.
- PC-5 FOR PRECAST CONCRETE RAMP COLOR REQUIREMENT, SEE "PRECAST STRUCTURAL CONCRETE" SPECIFICATION.



SHEET NO. Plotted Date: 2/26/2014

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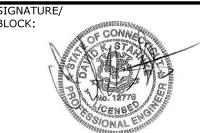
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**NEW HAVEN - HARTFORD SPRINGFIELD** RAIL CORRIDOR

**BERLIN** 

170-3155 RAWING NO.

**FST-001** 

STRUCTURAL NOTES 1

01.12.002

#### PRECAST CONCRETE (CONTINUED)

- PC-6 ALL OPENINGS (SHOP AND FIELD CUT) MUST BE SHOWN ON FINAL APPROVED SHOP DRAWINGS. FIELD CUT OPENINGS ARE NOT PERMITTED UNLESS SPECIFICALLY SHOWN ON THE SHOP DRAWINGS AND ACCOUNTED FOR IN THE DESIGN BY THE PRECAST MANUFACTURER.
- PC-7 REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND REVEALS NOT SHOWN.
- PC-8 COORDINATE WITH ELECTRICAL DRAWINGS FOR GROUNDING REQUIREMENTS.
- PC-9 PRECAST CONCRETE PLANKS AND RAMPS:
  - A. PRECAST CONCRETE PLANKS AND RAMPS ARE TO BE DESIGNED FOR SUPERIMPOSED DEAD AND LIVE LOADS INDICATED ON THE DRAWINGS, AND IN ACCORDANCE WITH ALL APPLICABLE BUILDING CODES AND REGULATIONS. ADDITIONALLY, DESIGN THE PANELS FOR ALL STRESSES INDUCED BY THE LIFTING AND ERECTION PROCESS.
  - B. PRECAST MANUFACTURER MUST CONSULT ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENINGS REQUIRED IN PRECAST PLANKS AND RAMPS IN ADDITION TO THOSE INDICATED ON THE STRUCTURAL DRAWINGS. REINFORCE PLANKS AND RAMPS, OR PROVIDE HEADER, AS REQUIRED.
  - C. FOLLOWING ERECTION, DEFLECTION OF PRECAST UNITS ARE NOT TO EXCEED THE SPAN/360 FOR THE SUM OF DEFLECTIONS DUE TO LIVE LOAD AND LONG-TERM SUSTAINED LOADS.
  - D. CONCRETE FOR TOPPING SLABS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF NOT LESS THAN 5000 PSI AT 28 DAYS.
  - E. SURFACE OF PRECAST PLANKS AND RAMPS TO RECEIVE CONCRETE TOPPING MUST BE CLEANED AND PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS OF ACI 302.1 (LATEST EDITION).
  - F. COMPOSITE CONCRETE TOPPING TO BE REINFORCED WITH 6x6-W2.9xW2.9 WELDED WIRE FABRIC (FURNISHED IN SHEETS).
  - G. PRECAST PLANKS SHALL HAVE A SMOOTH ALIGNMENT ALONG TRACK-SIDE FACE WHEN TIED TOGETHER. ALLOWABLE TOLERANCE SHALL BE  $\frac{1}{8}$ ".

#### STRUCTURAL STEEL

- S-1 PRIOR TO FABRICATION, THE STEEL FABRICATOR IS TO SUBMIT TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW THE FOLLOWING:
  - A. DESIGN CALCULATIONS OF STRUCTURAL STEEL CONNECTIONS, PREPARED BY OR UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WHICH THE PROJECT IS CONSTRUCTED
  - AND BEARING THE SEAL OF THE PROFESSIONAL ENGINEER.

    B. SHOP DRAWINGS SHOWING ERECTION PLANS, PIECE DRAWINGS, AND CONNECTION DETAILS.
- S-2 THE STRUCTURAL STEEL FABRICATOR, AND/OR GENERAL CONTRACTOR, MUST VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS AT THE SITE. ALL DISCREPANCIES FOUND ARE TO BE REPORTED TO THE STRUCTURAL ENGINEER OF RECORD PRIOR TO PREPARATION OF SHOP DRAWINGS. SHOP DRAWINGS ARE TO INCLUDE ALL FIELD MEASUREMENTS AND CONDITIONS.
- S-3 STRUCTURAL STEEL FABRICATOR IS TO PROVIDE FOR VERTICAL AND HORIZONTAL FIELD ADJUSTMENT OF ALL SUPPORT ASSEMBLIES.
- S-4 CUTS, HOLES, COPING, ETC REQUIRED FOR OTHER TRADES MUST BE SHOWN ON THE SHOP DRAWINGS AND MADE IN THE SHOP. CUTS OR BURNING OF HOLES IN THE FIELD WILL NOT BE PERMITTED.
- S-5 STEEL BEAMS ARE TO BE EQUALLY SPACED IN BAYS UNLESS OTHERWISE NOTED.
- S-6 FABRICATE AND INSTALL BEAMS WITH NATURAL CAMBER UP UNLESS CAMBER IS NOTED ON THE DRAWINGS.
- S-7 ALL STRUCTURAL STEEL FRAMES AND TRUSSES ARE TO BE SECURELY BRACED UNTIL ALL FLOOR SLABS AND ROOF DECKS HAVE BEEN INSTALLED AND BECOME CAPABLE OF STABILIZING THE FRAMES.
- S-8 UNLESS ALTERNATE CONNECTIONS ARE APPROVED BY THE ENGINEER, BOLTED CONNECTIONS SHALL BE MADE ACCORDING TO AISC TABLE II OR III FRAMED BEAM CONNECTIONS. THE MINIMUM DEPTH OF THE CONNECTION MUST BE MORE THAN 67% OF THE BEAM DEPTH EXCEPT THAT BEAMS FRAMING TO COLUMNS SHALL HAVE FULL DEPTH CONNECTIONS USING  $\frac{3}{8}$ " MINIMUM CONNECTION ANGLES OR PLATES.
  - A. NON-COMPOSITE BEAM CONNECTIONS TO BE DESIGNED FOR ONE HALF THE UNIFORM LOAD CAPACITY OF THE BEAM AS TABULATED BY AISC UNLESS HIGHER LOADS ARE INDICATED ON THE DRAWINGS.
  - B. COMPOSITE BEAMS (SHEAR STUDS ON TOP FLANGE) REQUIRE CONNECTION CAPACITIES TO BE INCREASED TO 75% LOAD CAPACITY OF THE BEAM UNLESS HIGHER LOADS ARE INDICATED ON THE DRAWINGS.

BEAM SIZE	MIN. NO. OF BOLTS
W8, W10	2
W12, W14	3
W16, W18	4
W21	5
W24	6
W27	7
W30	8
W33	9
W36	10

- S-9 UNLESS OTHERWISE NOTED, STRUCTURAL STEEL CONNECTIONS TO BE SHOP WELDED AND FIELD BOLTED.
  - A. BOLTS: 3/4" DIAMETER ASTM A 325 UNO WITH MATCHING WASHERS AND HEAVY HEX NUTS. USE TYPE N (HIGH STRENGTH) FOR FRAMED CONNECTIONS AND TYPE SC AT WIND MOMENT AND BRACING CONNECTIONS.
- S-10 EXPANSION BOLTS TO BE STUD TYPE, CARBON STEEL ANCHORS OF THE DIAMETER AND EMBEDMENT INDICATED ON THE DRAWINGS. USE HILTI KWIK BOLT TZ EXPANSION ANCHORS MANUFACTURED BY HILTI FASTENING SYSTEMS, OR APPROVED EQUAL. INSTALL PER MANUFACTURERS RECOMMENDATIONS.

#### STRUCTURAL STEEL (CONTINUED)

- S-11 SUBSTITUTION OF EXPANSION ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED.
- S-12 SHEAR STUD CONNECTORS TO BE  $\frac{3}{4}$ " DIAMETER X  $3\frac{1}{2}$ " LONG (IN PLACE HEIGHT) AND SECURELY WELDED TO THE BEAMS. NUMBER OF STUDS IS INDICATED BY (XX) AFTER BEAM SIZE ON PLAN. NUMBER OF STUDS INDICATE BY (XX-XX-XX ETC) SHALL BE PLACED IN CORRESPONDING GROUPS BETWEEN INTERSECTING MEMBERS AND SUPPORTING MEMBERS (NO STUDS ON CANTILEVERS).
  - A. WHERE DECK IS PERPENDICULAR TO COMPOSITE BEAM (I.E. FILLER BEAM), PLACE A SINGLE STUD IN EVERY OTHER DECK CELL STARTING AT EACH BEAM END AND WORKING TOWARD THE CENTER OF THE BEAM. ANY REMAINING STUDS ARE TO BE PLACED IN EMPTY CELLS STARTING AGAIN AT EACH BEAM END AND WORKING TOWARD THE CENTER. ADDITIONAL STUDS OR "PUDDLE WELDS" MUST BE USED FOR REMAINING EMPTY FLUTES. IF NUMBER OF STUDS IS MORE THAN NUMBER OF FLUTES, PLACE DOUBLE OR TRIPLE ROWS AS NEEDED STARTING FROM EACH BEAM END AND WORKING TOWARD THE CENTER OF THE BEAM.
  - B. WHERE DECK IS PARALLEL TO COMPOSITE BEAM (I.E. GIRDER), STUDS ARE TO BE EQUALLY SPACED OVER THE LENGTH OF THE BEAM. STUDS IN GROUPS BETWEEN INTERSECTING MEMBERS ARE TO BE EQUALLY SPACED.
  - C. MINIMUM CENTER-TO-CENTER SPACING OF STUDS TO BE 6 DIAMETERS  $(4^{1}\!\!/2")$  ALONG LONGITUDINAL AXIS OF COMPOSITE BEAM AND 4 DIAMETERS (3") TRANSVERSE TO THE LONGITUDINAL AXIS OF THE COMPOSITE BEAM. PLACE SINGLE ROW STUDS ON BEAM CENTER LINE. FOR STAGGERED ARRANGEMENT OF STUDS MAINTAIN MINIMUM  $3^{3}\!\!/4"$  SPACE BETWEEN STUDS, AND  $7_{8}$ " MINIMUM DISTANCE FROM EDGE OF BEAM FLANGE. STUD SPACING IS NOT TO EXCEED 36" ON CENTER.
  - D. SHOP DRAWING OF STUD PLACEMENT MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- S-13 PAINT AND PROTECTION:
  - A. STRUCTURAL STEEL TO RECEIVE PAINTED FINISH TO BE SHOP CLEANED AND PRIME PAINTED PER THE SPECIFICATIONS. REFERENCE ARCHITECTURAL DRAWINGS FOR FINISH PAINT SYSTEMS.
  - B. GALVANIZED FASTENERS AND ACCESSORIES TO BE HOT DIPPED PER ASTM A153. C. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 ZINC RICH PAINT
  - D. BRIDGE ASSEMBLY TO BE TREATED WITH THERMAL SPRAY METALIZED (TSM)
    COATING AND TOP COAT PER SPECS. FIELD WELDS WILL REQUIRE TOUCH UP OF
    TSM FINISH.
- S-14 ALL CANOPY AND PEDESTRIAN BRIDGE ELEMENTS CONSIDERED "ARCHITECTURALLY EXPOSED STRUCTURAL STEEL."

#### **MASONRY**

- M-1 MASONRY WORK MUST BE IN CONFORMANCE WITH THE "BUILDING CODE FOR MASONRY STRUCTURES" (ACI-530-05), AND THE "SPECIFICATIONS FOR MASONRY STRUCTURES" (ACI-530.1-05), OF THE AMERICAN CONCRETE INSTITUTE.
- M-2 ALL MORTAR TO CONFORM TO ASTM C270, TYPE N
  A. PORTLAND CEMENT: ASTM C150, TYPE I OR II.
  B. LIME: ASTM C207.
- M-3 GROUT IS TO CONFORM TO ASTM C476 AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c) OF 3000 PSI.

  A. SLUMP: 8 TO 11 INCHES.
- M-4 CONCRETE MASONRY SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF MASONRY (F'M) EQUAL TO 1900 PSI AND:

  A. HOLLOW BLOCK: ASTM C90, NORMAL WEIGHT.
- M-5 EPOXY COATED BAR REINFORCEMENT PER ASTM A615, GRADE 60 AND ASTM A775.
  GROUT ALL REINFORCED CELLS SOLID WITH GROUT. PROVIDE MINIMUM LAP SPLICES
  OF 48 BAR DIAMETERS. PROVIDE BAR SPACERS AS REQUIRED TO PROPERLY LOCATE
  REINFORCING WITHIN CMU CELLS. PLACE BARS @ CENTER OF CELLS UNO.
- 1-6 PROVIDE ONE-PIECE PREFABRICATED HORIZONTAL JOINT REINFORCING UNITS PER SPEC AT 16" O.C. VERTICALLY TYPICAL AND AT 8" O.C. AT ALL WALL CORNERS AND INTERSECTIONS AND IN THE FIRST TWO COURSES ABOVE AND BELOW MASONRY OPENINGS. PROVIDE LAP AS RECOMMENDED BY THE MANUFACTURER WITH A MINIMUM OF 6". DISCONTINUE HORIZONTAL JOINT REINFORCING AT CONTROL JOINTS.
- M-7 FULL BED AND HEAD JOINTS MUST BE USED.
- M-8 GROUT CELLS OF CMU SOLID FOR BOND BEAMS AND CELLS WITH VERTICAL REINFORCEMENT.
- M-9 CONTROL JOINTS IN MASONRY WALLS TO BE PROVIDED WHERE INDICATED ON THE STRUCTURAL AND ARCHITECTURAL DRAWINGS OR AT A MAXIMUM OF 24'-0" ON CENTER.
- M-10 ALL MASONRY WALLS TO BE SECURELY BRACED UNTIL ROOF SYSTEM HAS BEEN INSTALLED AND HAS BECOME CAPABLE OF STABILIZING THE WALLS.
- M-11 DOWEL REINFORCED MASONRY WALLS TO WALL OR CURB AS SHOWN ON THE PLANS.
  LOCATE DOWELS IN CELLS TO CONTAIN WALL REINFORCEMENT. LAP DOWELS AND WALL
  REINFORCEMENT A MINIMUM OF 48 BAR DIAMETERS UNO.
- M-12 DURING CONSTRUCTION, COVER AND PROTECT THE TOPS OF MASONRY WALLS AT THE END OF EACH DAY.
- M-13 UNLESS NOTED OTHERWISE, PLACE TYPICAL CMU REINFORCMENT IN CENTER OF FULLY GROUTED CELLS AND SPACE AS FOLLOWS: (1)#5 VERTICAL AT 16" ON CENTER.
- M-14 ALL CORNERS TO BE TIED BY MASONRY BOND.
- M-15 DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS FOR MASONRY ARE NOMINAL. SEE ARCHITECTURAL DRAWINGS FOR ACTUAL MASONRY DIMENSIONS.

#### **METAL DECK**

- D-1 METAL DECK SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH THE "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS" OF THE STEEL DECK INSTITUTE, LATEST EDITION.
- D-2 ROOF DECK TO BE FASTENED TO THE SUPPORTING STEEL AT THE ENDS OF UNITS AND AT ALL INTERMEDIATE SUPPORTS WITH \(^5/8\)" DIAMETER PUDDLE WELDS IN A 36/4 PATTERN. DECK SIDE LAPS BETWEEN SUPPORTS SHALL BE FASTENED BY WELDS AT INTERVALS NOT EXCEEDING THE LESSER OF HALF THE SPAN OR 36". ANY SPLIT OR PARTIAL PANELS SHALL BE FASTENED TO THE SUPPORTING STRUCTURE IN EVERY VALLEY REGARDLESS OF ADJACENT FASTENER PATTERNS.
- D-3 COMPOSITE STEEL FLOOR DECK TO BE WELDED TO ALL SUPPORTING STEEL ELEMENTS WHERE NO SHEAR STUDS ARE USED.
- D-4 DECK UNITS TO BE A MINIMUM OF THREE (3) SPANS CONTINUOUS WITH LAPS PLACED OVER SUPPORTS WHERE POSSIBLE.
- D-5 METAL DECK SUPPLIER SHALL PROVIDE LIGHT GAUGE METAL CONCRETE POUR STOPS, DECK CLOSURE PIECES AND SHALL REINFORCE OR SUPPORT DECK AT OPENINGS AND COLUMN AREAS AS REQUIRED, IN ACCORDANCE WITH THE STEEL DECK INSTITUTE.

#### LIGHT GAUGE STEEL FRAMING

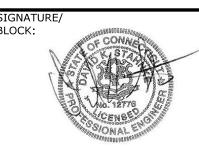
- L-1 STRUCTURAL MEMBERS MUST BE DESIGNED IN ACCORDANCE WITH THE AMERICAN IRON AND STEEL INSTITUTE (A.I.S.I) "NORTH AMERICAN SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
- L-2 STRUCTURAL MEMBERS TO BE FORMED FROM CORROSION RESISTANT STEEL CONFORMING TO ASTM A653 WITH MINIMUM YIELD STRESS OF 50 KSI FOR STUDS OR JOISTS.
- L-3 LIGHT GAUGE MEMBERS AND DETAILS SHOWN ON THE ARCHITECTURAL OR STRUCUTRAL DRAWINGS ARE FOR BID PURPOSES ONLY. STRUCTURAL STUD AND/OR JOIST FRAMING MEMBERS AND CONNECTIONS ARE TO BE ENGINEERED BY THE MANUFACTURER. DESIGN CALCULATIONS PREPARED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CONNECTICUT AND SHOP DRAWINGS INDICATING ALL JAMBS, POSTS, HEADERS, BRACING AND PIECES NECESSARY FOR CONSTRUCTION SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW.
- L-4 EXTERIOR STUD WALLS TO BE DESIGNED FOR A UNIFORM WIND PRESSURE AS REQUIRED BY CODE AND A MAXIMUM PERMISSIBLE HORIZONTAL DEFLECTION OF L/360 (L/600 FOR MASONRY VENEER).
- L-5 MAXIMUM STUD SPACING TO BE 16" ON CENTER WITH DOUBLED STUDS (MINIMUM) AT EACH SIDE OF OPENINGS.
- L-6 FRAMING COMPONENTS ARE TO BE CUT SQUARELY FOR ATTACHMENT TO PERPENDICULAR MEMBERS OR AS REQUIRED FOR AN ANGULAR FIT AGAINST ABUTTING MEMBERS.
- L-7 FIELD CUTTING OF STUDS MUST BE DONE BY SAWING OR SHEARING. TORCH CUTTING OF COLD-FORMED MEMBERS IS UNACCEPTABLE.
- L-8 FASTENING OF COMPONENTS IS TO BE WITH SELF-DRILLING SCREWS OR WELDING. WELDING OF STUDS MUST COMPLY WITH AWS D 1.3. ALL WELDS TO BE TOUCHED-UP WITH ZINC-RICH PAINT. SCREWS AND WELDS TO BE OF SUFFICIENT SIZE TO ENSURE THE STRENGTH OF THE CONNECTION. WIRE TYING OF COMPONENTS IS NOT PERMITTED.
- L-9 LIGHT GAUGE STEEL FRAMING MEMBERS ARE TO BE SECURELY ATTACHED TO THE STRUCTURE WHERE INDICATED ON THE DRAWINGS, OR APPROVED SHOP DRAWINGS. FASTENERS TO BE COMPATIBLE WITH THE STRUCTURAL MEMBERS. POWDER DRIVEN FASTENERS ARE NOT ACCEPTABLE FOR STRUCTURAL APPLICATIONS.
- L-10 PROVIDE VERTICAL SLIDE TRACKS, OR SLIDE CLIPS, WHERE INDICATED ON THE DRAWINGS OR OTHERWISE REQUIRED TO ALLOW FOR VERTICAL STRUCTURAL MOVEMENTS. MAXIMUM EXPECTED STRUCTURE DEFLECTION IS L/360 AT FLOORS AND L/240 AT ROOFS.
- L-11 REFERENCE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION, INCLUDING SHEATHING TYPE, FINISHES, OPENINGS, LOCATIONS, ETC.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

C DONOHUE
CHECKED BY:
H BUI

SCALE AS NOTED







PROJECT TITLE:

NEW HAVEN - HARTFORD SPRINGFIELD RAIL CORRIDOR BERLIN

170-3155
DRAWING NO.
FST-002

01.12.003

STRUCTURAL NOTES 2

TURAL NOTES 2

REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 2/26/2014

Filename: ...\FA\_CGR\_CPS\_0170-2296\_007\_\_04\_FST\_\_002.dgn

#### STRUCTURAL WOOD

- W-1 SAWN LUMBER SHALL BE IN ACCORDANCE WITH THE NFPA NATIONAL DESIGN SPECIFICATIONS.
- W-2 ALL CONNECTIONS TO BE MADE WITH APPROPRIATE METAL HANGERS,
  - FRAMING ANGLES, CONNECTORS, STRAPS, ETC.

    A. BOLTS OR LAG SCREWS PER ASTM A307 SPECIFICATIONS.
  - B. NAILS TO BE COMMON NOT BOX. NAILS TO BE GALVANIZED.
  - C. THE QUANTITY AND SIZE OF NAILS AND OTHER FASTENERS CONNECTING WOOD MEMBERS MUST NOT BE LESS THAN THE FASTENING SCHEDULE SET FORTH IN THE APPLICABLE BUILDING CODE.
- W-3 PROVIDE CORROSION RESISTANT, LIGHT GAUGE METAL FRAMING CONNECTORS AS INDICATED ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND IN THE SPECIFICATIONS. PROVIDE MAXIMUM NUMBER AND SIZE OF FASTENERS ACCORDING TO MANUFACTURERS WRITTEN INSTRUCTIONS. UNLESS NOTED OTHERWISE, PROVIDE CONNECTORS WITH THE FOLLOWING MINIMUM CAPACITIES:
  - A. TENSILE CAPACITY: 500 lbs
  - B. PERPENDICULAR TO THE MEMBER: 200 lbs C. PARALLEL TO THE MEMBER: 300 lbs
  - D. JOIST HANGERS: 500 lbs
- W-4 PROVIDE NAILED CONNECTIONS FOR SHEATHING AS FOLLOWS:
  - A. ROOF: 8d NAILS SPACED 6" OC EDGE, 12" OC FIELD

#### TRACK BASELINE AND CENTERLINE NOTES:

- 1. THE BASELINE OF THE PROPOSED TRACKS ARE BY OTHERS AND BEING CONSTRUCTED UNDER A SEPARATE STATE PROJECT. THEY ARE SHOWN HERE FOR INFORMATIONAL PURPOSES ONLY AND ARE IN NO WAY WARRANTED TO INDICATE THE AS-BUILT CONDITIONS IN THE FIELD. THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE PROPOSED TRACKS VIA A FIELD SURVEY PRIOR TO START OF PLATFORM CONSTRUCTION AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES. AT ALL TIMES DURING THE CONSTRUCTION OF THE PLATFORMS, THE CONTRACTOR SHALL MAINTAIN THE HORIZONTAL AND VERTICAL OFFSETS AS INDICATED IN THE CONTRACT DOCUMENTS.
- 2. THE BASELINE OF THE PROPOSED GAUNTLET TRACK IS BY OTHERS AND BEING CONSTRUCTED UNDER A SEPARATE STATE PROJECT. IT IS REFERENCED HERE FOR INFORMATIONAL PURPOSES ONLY AND IS IN NO WAY WARRANTED TO INDICATE THE AS-BUILT CONDITIONS IN THE FIELD. THE CONTRACTOR SHALL CONSTRUCT THE PLATFORMS IN ACCORDANCE WITH THE APPLICABLE NOTES FOR TRACK 1 AND TRACK 2 AND AS SHOWN ON THE PLANS.

#### **KEYS AND ABBREVIATIONS**

A/E	ARCHITECT/ENGINEER	LB	POUND
AB.	ANCHOR BOLT	ld	DEVELOPMENT LENGTH
ABV ACI	ABOVE AMERICAN CONCRETE INSTITUTE	LL LLH	LIVE LOAD LONG LEG HORIZONTAL
ADDL	ADDITIONAL	LLV	LONG LEG HORIZONTAL LONG LEG VERTICAL
AFF	ABOVE FINISHED FLOOR	LONG	LONGITUDINAL
AHU	AIR HANDLING UNIT	LP	LOW POINT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	LWC	LIGHT-WEIGHT CONCRETE
ALT APPROX	ALTERNATE APPROXIMATE	MAS MATL	MASONRY MATERIAL
ARCH	ARCHITECT OR ARCHITECTURAL(S)	MAX	MAXIMUM
ASTM		MCJ	MASONRY CONTROL JOINT
APG	AUGER PRESSURE GROUTED PILE	MECH	MECHANICAL(S)
B PL	BASE PLATE OR BEARING PLATE	M/E/P	MECHANICAL, ELECTRICAL & PLUMBING
B/ BF	BOTTOM OF BOTH FACES	MFR MID	MANUFACTURER MIDDLE
BLDG	BUILDING	MIN	MINIMUM
BLK	BLOCK	MISC	MISCELLANEOUS
BM	BEAM	MO	MASONRY OPENING
BRG	BEARING	MP	MASONRY PIER
BS BT	BOTH SIDES BENT	N NF	NORTH NEAR FACE
BTWN	BETWEEN	NIC	NOT IN CONTRACT
СВ	CATCH BASIN	NO	NUMBER
CF	CUBIC FOOT OR CUBIC FEET	NOM	NOMINAL
CHAM	CHAMFER CAST IN PLACE	NS NTS	NEAR SIDE NOT TO SCALE
CIP CJ	CONTROL JOINT	NWC	NOT TO SCALE NORMAL-WEIGHT CONCRETE
Ç	CENTERLINE	OC	ON CENTER
ፍ CLR	CLEAR	OD	OUTSIDE DIAMETER
CMU	CONCRETE MASONRY UNIT	OPNG	OPENING OPPOSITE HAND
COL	COLUMN		OPPOSITE HAND
CONC CONN	CONCRETE CONNECTION	P/C PCF	PRECAST CONCRETE POUNDS PER CUBIC FEET
CONST	CONSTRUCTION	PCI	POUNDS PER CUBIC INCH
CONT	CONTINUOUS	PERM	PERMANENT
CRSI	CONCRETE REINFORCING STEEL INSTITUTE	PLF	POUNDS PER LINEAR FOOT
CT C&S	CANTILEVER COMMUNICATION & SIGNAL	P/S	PRESTRESSED CONCRETE
db	BAR DIAMETER	PSF PSI	POUNDS PER SQUARE FEET POUNDS PER SQUARE INCH
DBL	DOUBLE	PVMT	PAVEMENT
DET	DETAIL	RAD	RADIUS OR RADII
DIA	DIAMETER	RE:	REFER TO
DIAG	DIAGONAL	REF	REFERENCE
DIM DL	DIMENSION DEAD LOAD	REINF REQD	REINFORCEMENT REQUIRED
DN	DOWN	REV	REVISION OR REVISE
DWG	DRAWING	ROW	RIGHT-OF-WAY
DWL	DOWEL	RR	RAILROAD
EA	EACH FACE	RTU SC	ROOF TOP UNIT
EF EL	EACH FACE ELEVATION	SCHED	SLIP CRITICAL SCHEDULE
ELEC	ELECTRICAL	SDI	STEEL DECK INSTITUTE
<b>EMBED</b>	EMBED(ED)(MENT)	SECT	SECTION
ENGR	ENGINEER	SER	STRUCTURAL ENGINEER OF RECORD
EOS EQ	EDGE OF SLAB EQUAL	SHT SIM	SHEET SIMILAR
EQUIP	EQUIPMENT	SL	SLOPE(D) OR SLOPING
EST	ESTIMATE(D)	SLV	SLEEVE
EW	EACH WAY	SOG	SLAB ON GRADE
EXC	EXCAVATE OR EXCAVATION	SP	SPACE(S)
EXIST EXP	EXISTING EXPANSION	SPA SPEC	SPACES OR SPACING SPECIFICATIONS
EXT	EXTERIOR	SS	STAINLESS STEEL
FD	FLOOR DRAIN	STD	STANDARD
FDN	FOUNDATION	STIFF	STIFFENER
FF FIN	FAR FACE FINISHED	STL STRUCT	STEEL STRUCTURAL
FL	FLOOR	SYMM	SYMMETRICAL
FS	FAR SIDE	T	THICKNESS
FT	FOOT OR FEET	T&B	TOP & BOTTOM
FTG	FOOTING	T&S	TEMPERATURE & SHRINKAGE
GA GALV	GAGE OR GAUGE GALVANIZED	T/ TPE	TOP OF TOP OF PIER ELEVATION
GC	GENERAL CONTRACTOR	TSE	TOP OF SHELF ELEVATION
HORIZ	HORIZONTAL	TSM	THERMAL SPRAY METALIZING
HP	HIGH POINT	TWE	TOP OF WALL ELEVATION
HS	HIGH STRENGTH	TEMP	TEMPORARY
HSS HT	HOLLOW STRUCTURAL SECTION HEIGHT	THD THK	THREAD(ED) THICKNESS
ID	INSIDE DIAMETER	TRANS	TRANSVERSE
IN	INCH(ES)	TSF	TONS PER SQUARE FEET
INCL	INLUDE(D)(ING), INCLUSIVE	TYP	TYPICAL
INFO INT	INFORMATION INTERIOR	UNO VERT	UNLESS NOTED OTHERWISE VERTICAL
IN I ISO JT	INTERIOR ISOLATION JOINT	VERT	VERTICAL VERIFY IN FIELD
JST	JOIST	W	WIDTH
JT	JOINT	W/	WITH
K	KIP(S)	W/O	WITHOUT
KB KCF	KNEE BRACE KIPS PER CUBIC FEET	WL WP	WIND LOAD
KLF	KIPS PER CUBIC FEET KIPS PER LINEAR FOOT	WT	WORKING POINT WEIGHT
KSF	KIPS PER SQUARE FEET	WWF	WELDED WIRE FABRIC
KSI	KIPS PER SQUARE INCH	WWR	WELDED WIRE REINFORCEMENT
L	LENGTH		

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SHEET NO. Plotted Date: 2/26/2014

REVISION DESCRIPTION

REV. DATE

DESIGNER/DRAFTER:

C DONOHUE

CHECKED BY:

H BUI

SCALE AS NOTED







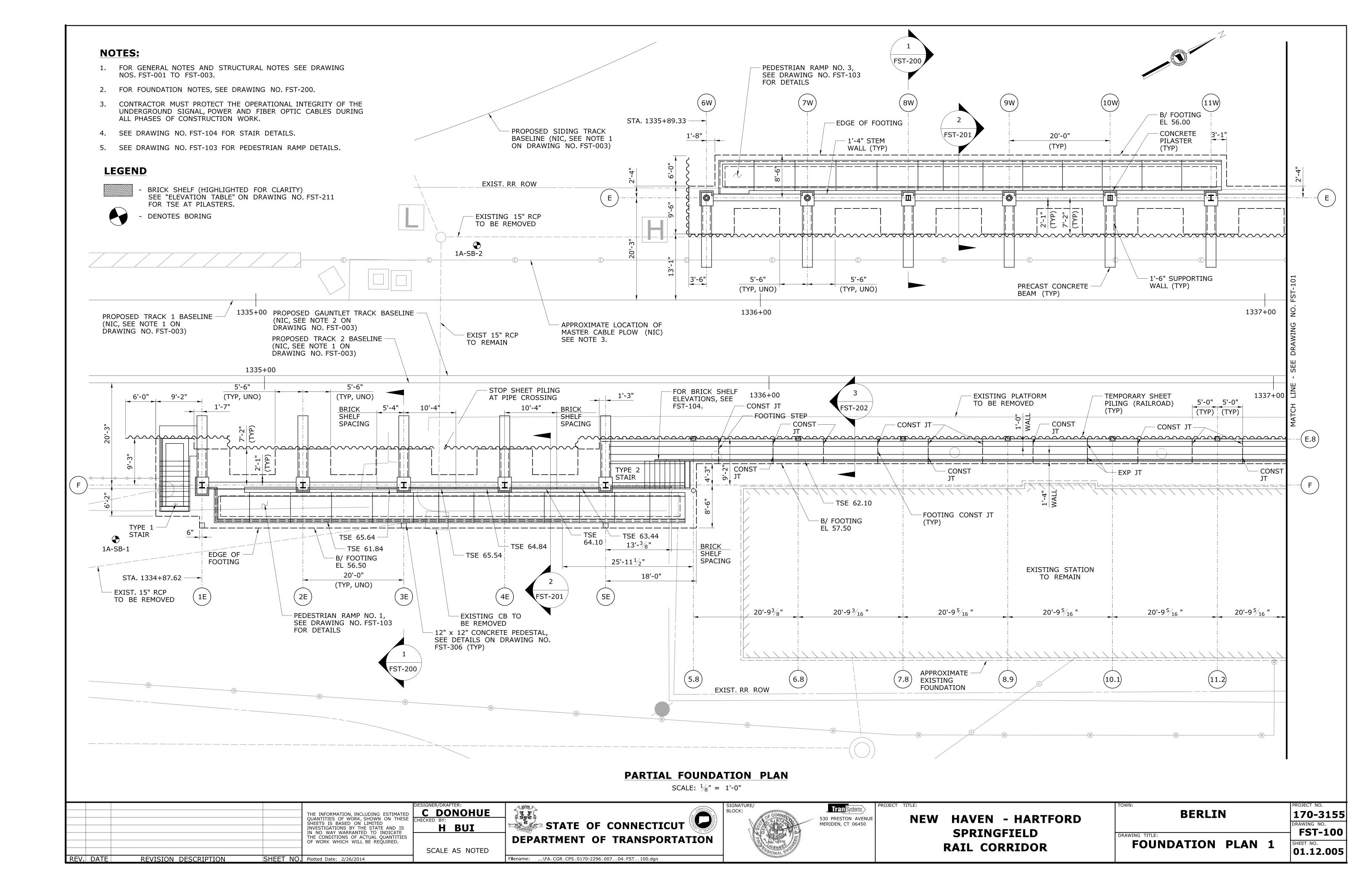
NEW HAVEN - HARTFORD SPRINGFIELD RAIL CORRIDOR BERLIN

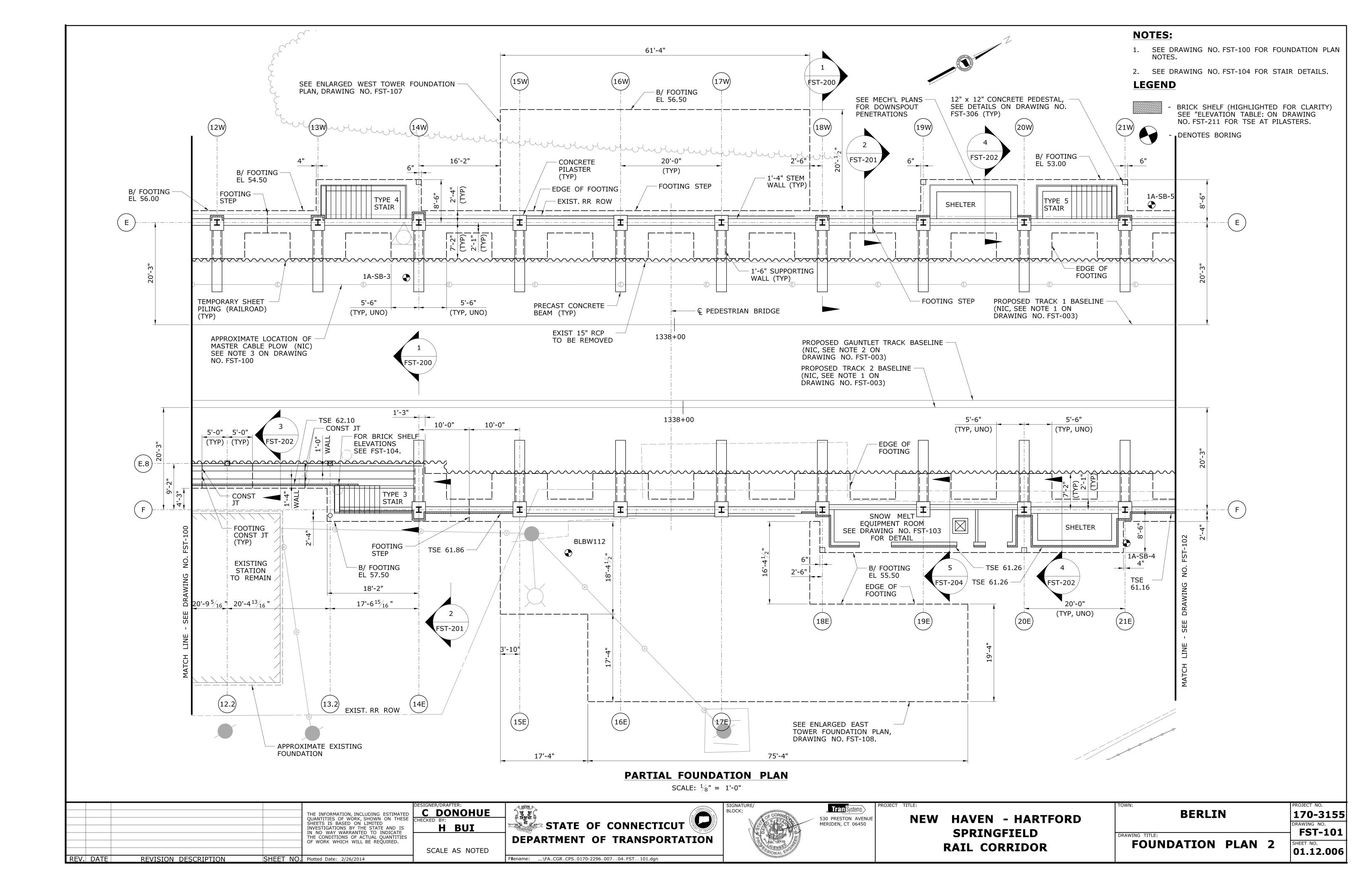
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FST-003

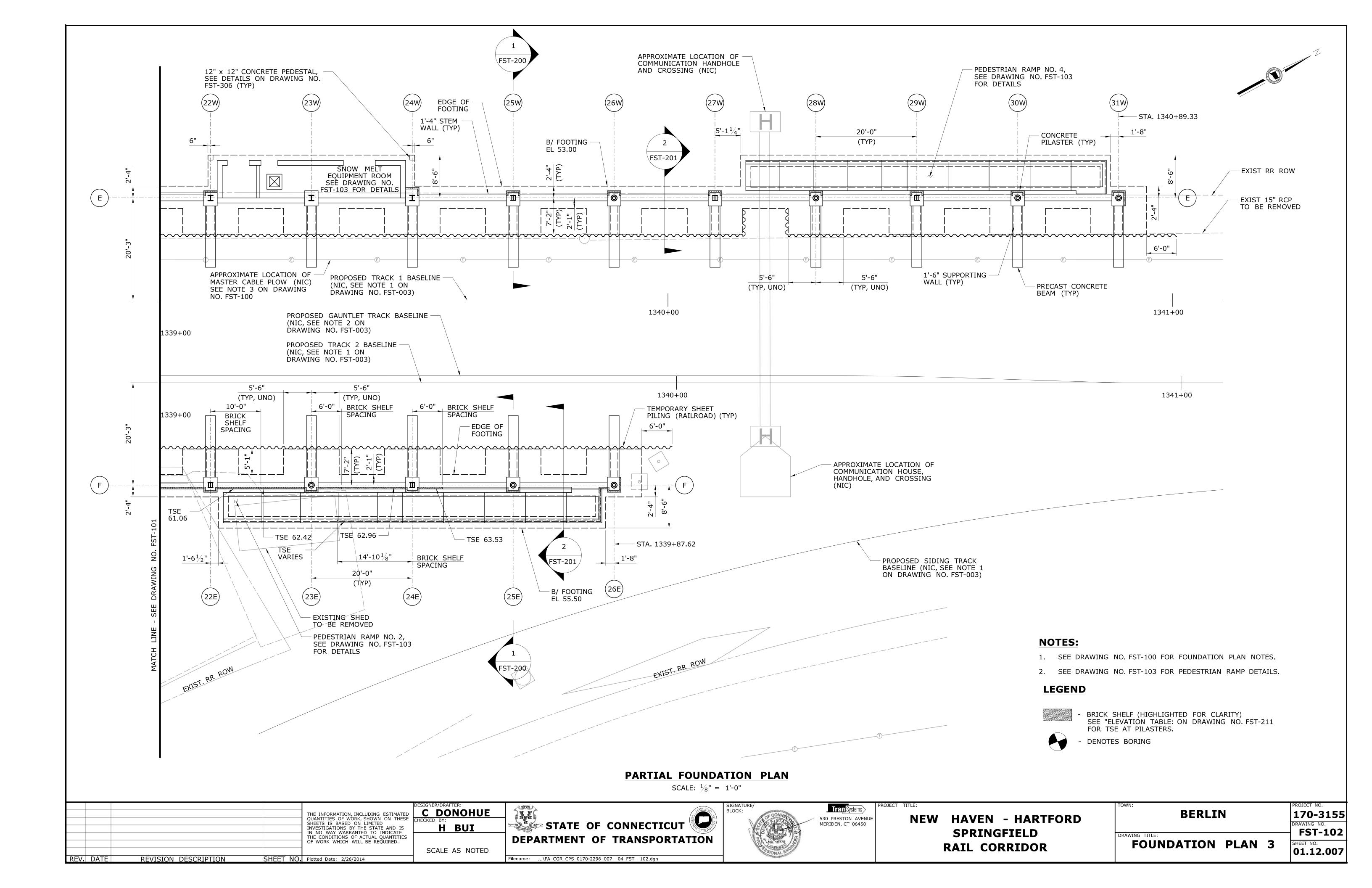
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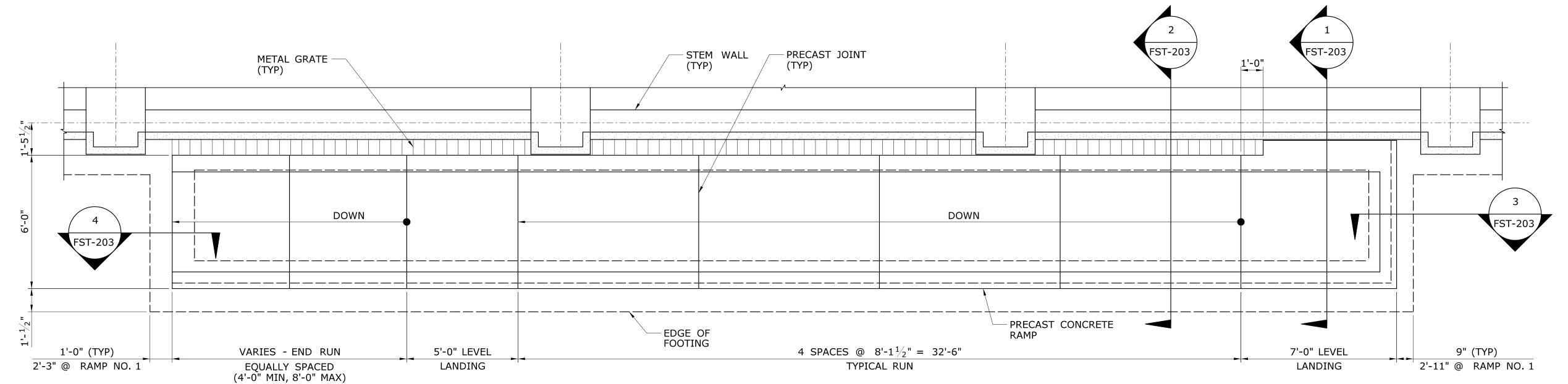
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RIDOR STRUCTURAL NOTES 3



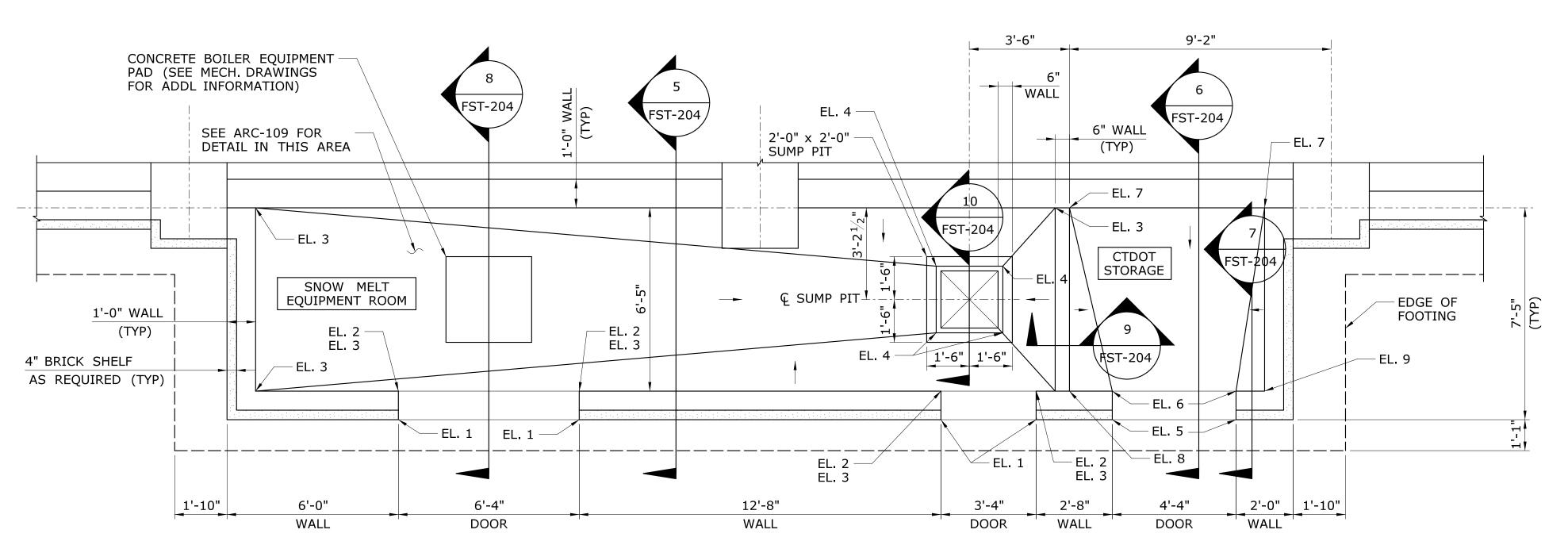






## TYPICAL PEDESTRIAN RAMP DETAIL

SCALE:  $\frac{3}{8}$ " = 1'-0"

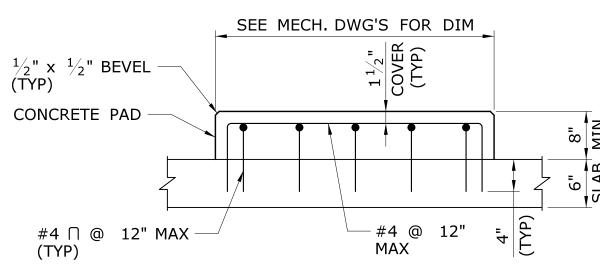


#### NOTE:

CONCRETE CURB AND TRENCH DRAIN NOT SHOWN FOR CLARITY.

## TYPICAL SNOW MELT EQUIPMENT ROOM DETAIL

SCALE:  $\frac{3}{8}$ " = 1'-0"



\* COORDINATE DIMENSIONS WITH MECH. DRAWINGS.

## **EQUIPMENT PAD DETAIL**

N.T.S.

			14.1.		
ELEVATION TABLE (FT)					
LOCATION	DESCRIPTION	WEST PLATFORM	EAST PLATFORM		
EL. 1	TOP OF WALL	60.20	60.60		
EL. 2	TOP OF WALL	60.20	60.60		
EL. 3	TOP OF SLAB	59.53	59.93		
EL. 4	TOP OF SLAB	59.29	59.69		
EL. 5	TOP OF SLAB	60.20	60.60		
EL. 6	TOP OF SLAB	60.21	60.61		
EL. 7	TOP OF SLAB	60.28	60.68		
EL. 8	TOP OF SLAB	60.23	60.63		
EL. 9	TOP OF SLAB	60.22	60.62		

#### **NOTES:**

- 1. FOR OVERALL FOOTING DIMENSIONS, SEE "FOUNDATION PLANS", DRAWING NOS. FST-100 TO FST-102.
- 2. SEE "HYDRONIC SNOW MELT PLANS" FOR SNOW MELT LAYOUT AT PEDESTRIAN RAMP.
- 3. SEE ARCHITECTURAL DRAWINGS FOR RAMP AND FLOOR SLOPES AT SNOW MELT EQUIPMENT ROOM AND CTDOT STORAGE ROOM.

## **LEGEND**

- 4" BRICK SHELF (HIGHLIGHTED FOR CLARITY)

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-	-	-	-	THE INFORMATION, INCLUDING ESTIMATED	
-	-	-	-	QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED	С
-	-	-	-	INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE	L
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-	-	-	-	OF WORK WHICH WILL BE REQUIRED.	ĺ
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DESIGNER/DRAFTER:

C DONOHUE

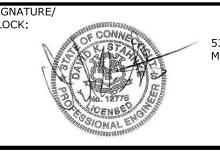
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STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

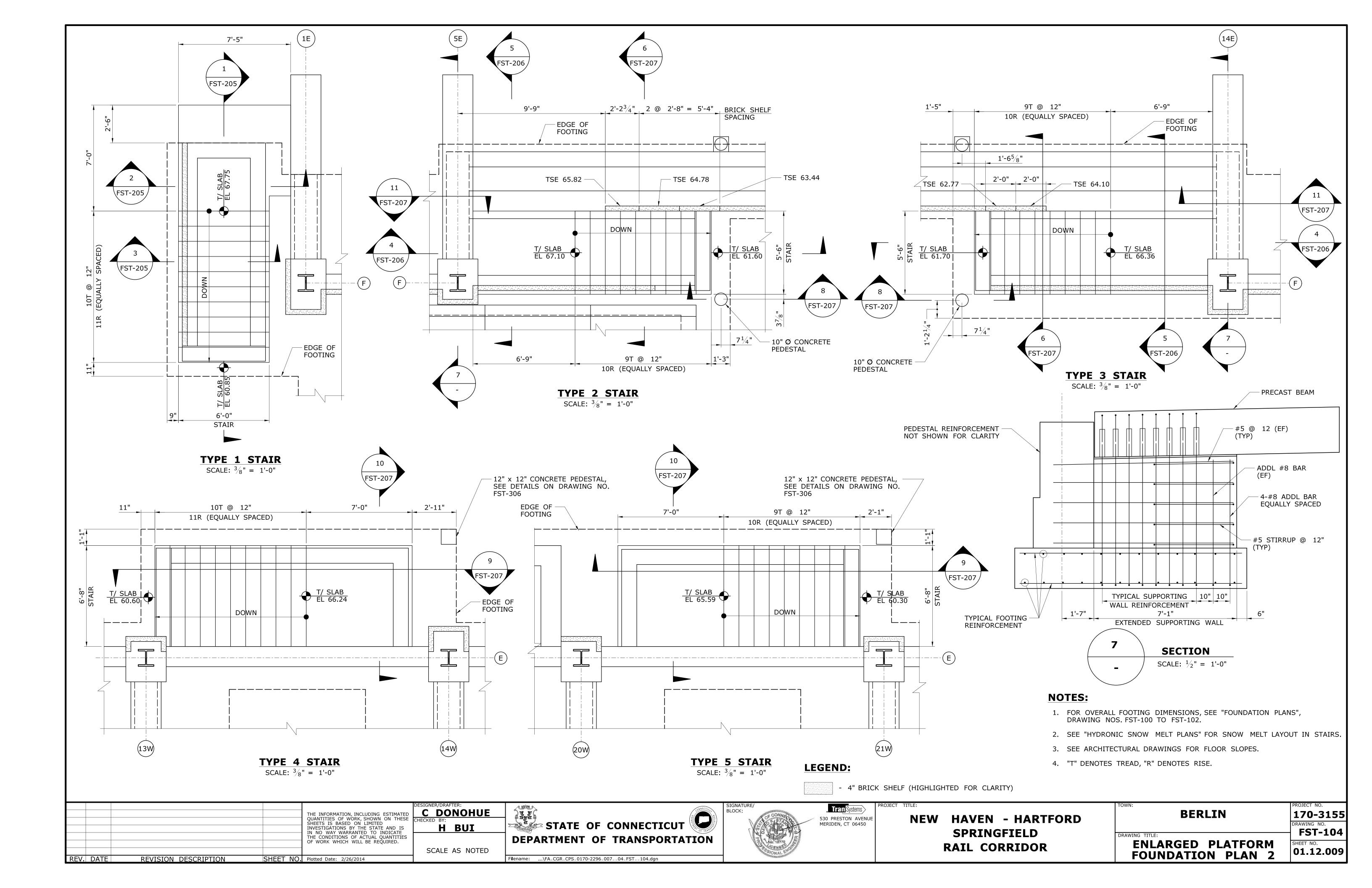
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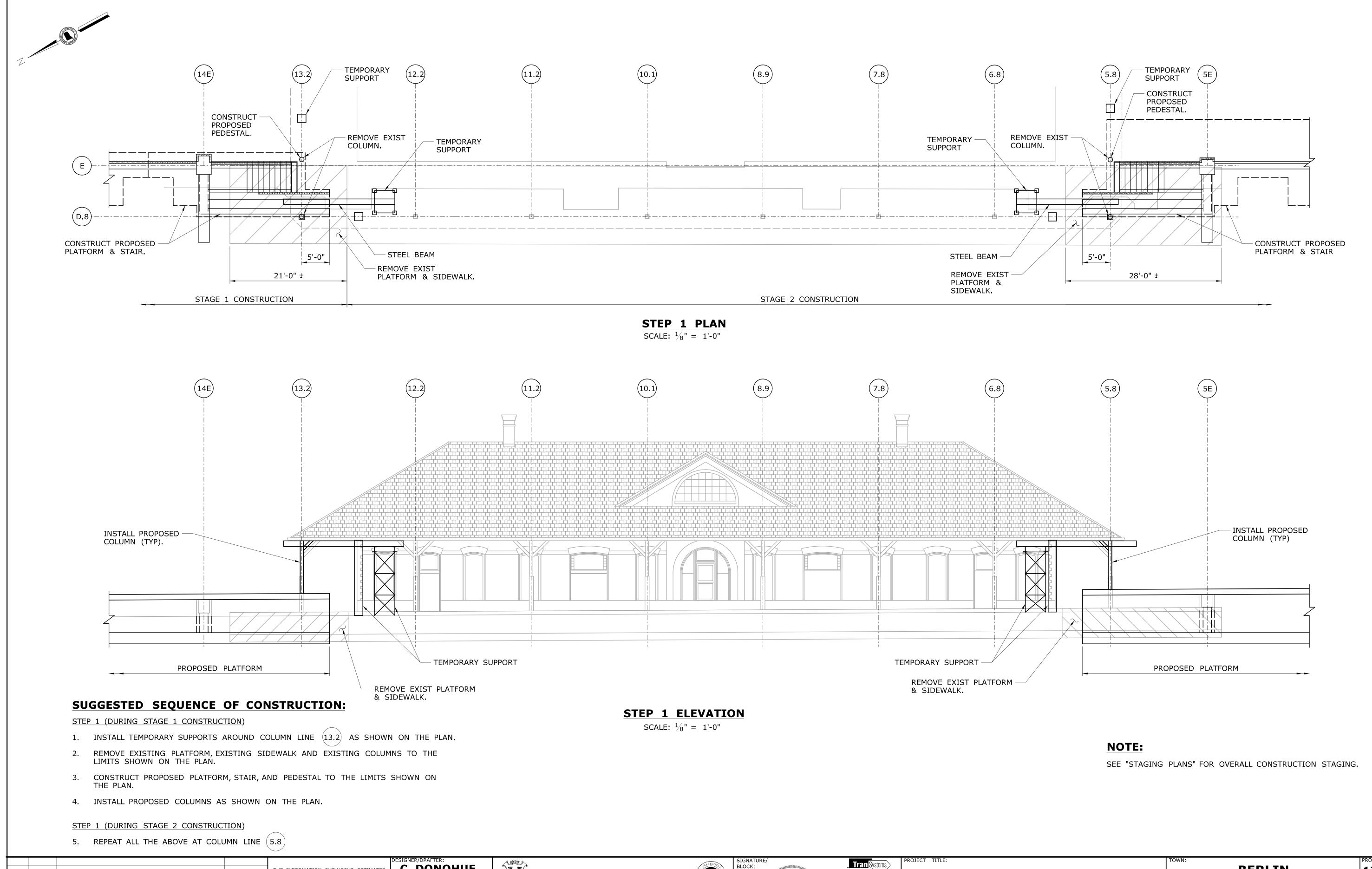


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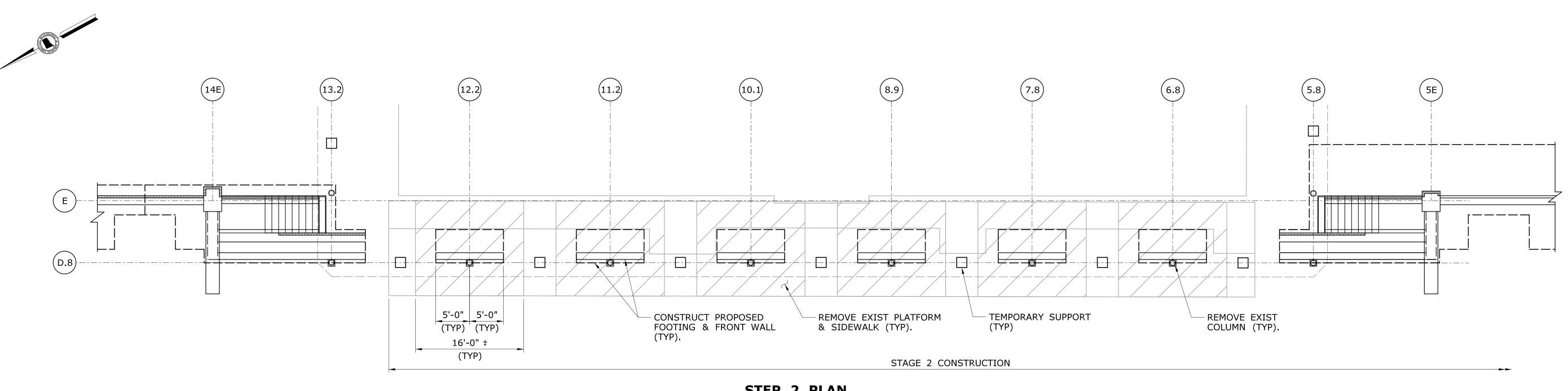
NEW HAVEN - HARTFORD SPRINGFIELD RAIL CORRIDOR

WN:	PROJECT NO.
BERLIN	170-3155
	DRAWING NO.
AWING TITLE:	FST-103
ENLARGED PLATFORM FOUNDATION PLAN 1	SHEET NO. <b>01.12.008</b>





STATE OF CONNECTICUT C DONOHUE THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED. **BERLIN** 170-3155 **NEW HAVEN - HARTFORD** 530 PRESTON AVENUE MERIDEN, CT 06450 H BUI **FST-105 SPRINGFIELD DEPARTMENT OF TRANSPORTATION** SUGGESTED SEQUENCE RAIL CORRIDOR 01.12.010 SCALE AS NOTED OF CONSTRUCTION 1 REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 2/26/2014 Filename: ...\FA\_CGR\_CPS\_0170-2296\_007\_\_04\_FST\_\_105.dgn



STEP 2 PLAN SCALE:  $\frac{1}{8}$ " = 1'-0"

(10.1)(5.8)(5E) 12 \FST-207 / TEMPORARY SUPPORT REMOVE EXIST PLATFORM & SIDEWALK (TYP). - INSTALL PROPOSED COLUMN (TYP) PROPOSED FOOTING & FRONT WALL (TYP)

## **STEP 2 ELEVATION**

SCALE:  $\frac{1}{8}$ " = 1'-0"

### **SUGGESTED SEQUENCE OF CONSTRUCTION (CON'T):**

STEP 1 (DURING STAGE 2 CONSTRUCTION)

- 1. INSTALL TEMPORARY SUPPORTS BETWEEN THE REMAIN EXISTING COLUMNS.
- 2. REMOVE EXISTING PLATFORM, EXISTING SIDEWALK AND EXISTING COLUMNS TO THE LIMITS SHOWN ON THE PLAN.
- 3. CONSTRUCT PROPOSED FOOTING AND FRONT SUPPORTING WALL TO THE LIMITS SHOWN ON THE PLAN.
- 4. INSTALL THE REMAINING PROPOSED COLUMNS.

FINAL STEP (DURING STAGE 2 CONSTRUCTION)

- 1. REMOVE ALL THE TEMPORARY SUPPORTS.
- REMOVE THE REMAINING EXISTING PLATFORM AND SIDEWALK.
- 3. CONSTRUCT THE REMAINING FOOTING.
- 4. CONSTRUCT THE REMAINING FRONT SUPPORT WALL AND THE ENTIRE BACK SUPPORTING
- 5. CONSTRUCT SLAB AND THE REMAINING WORK.

## **NOTE:**

SEE "STAGING PLANS" FOR OVERALL CONSTRUCTION STAGING.

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				THE INFORMATION, INCLUDING ESTIMATED	
				QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED	СН
				INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE	
				THE CONDITIONS OF ACTUAL QUANTITIES	
				OF WORK WHICH WILL BE REQUIRED.	
RF\/	DATE	REVISION DESCRIPTION	SHEET NO	Plotted Date: 2/26/2014	ĺ

C DONOHUE

CHECKED BY: H BUI

SCALE AS NOTED



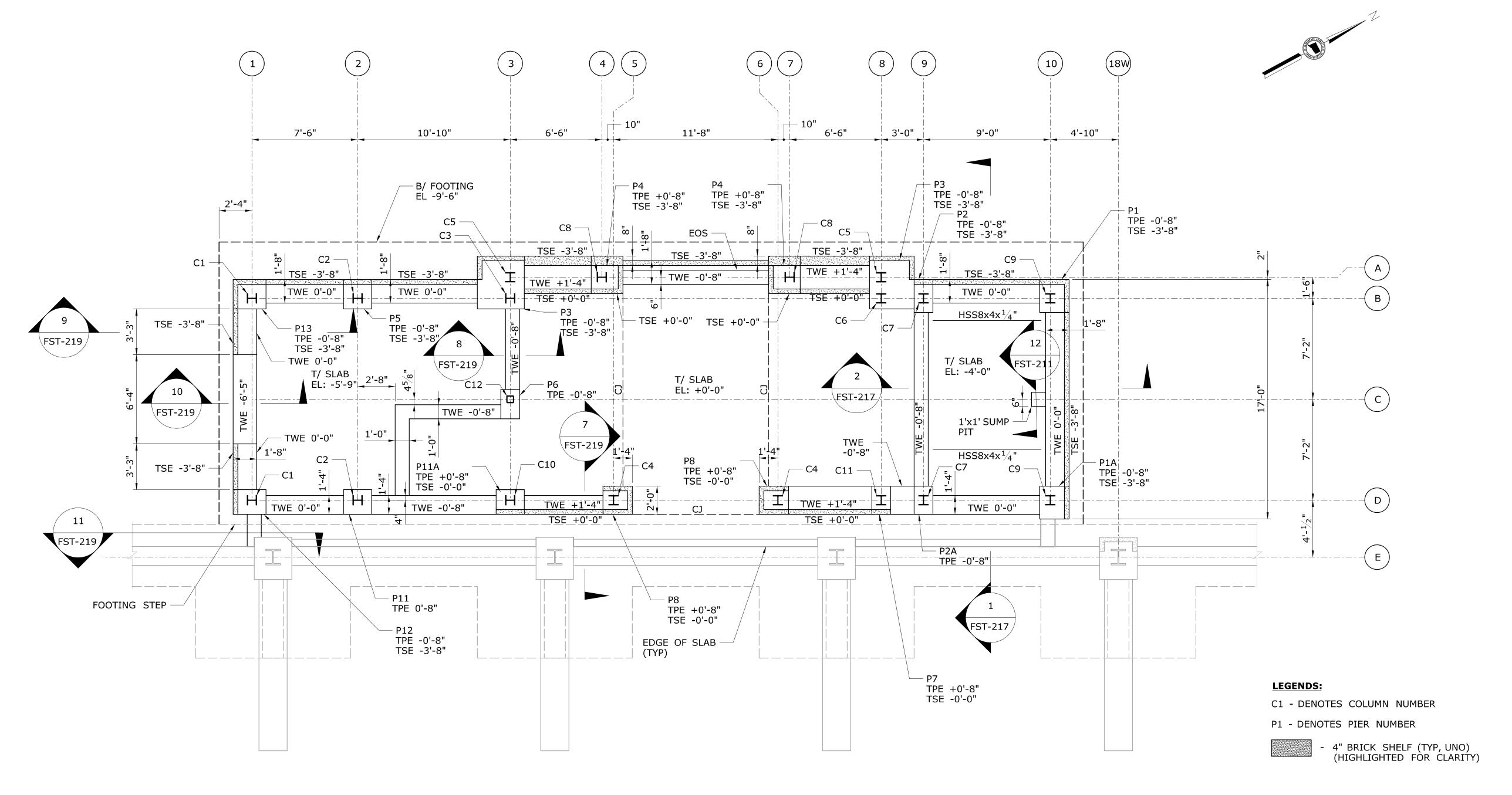


**NEW HAVEN - HARTFORD SPRINGFIELD** RAIL CORRIDOR

			BER	LIN		
DRAWING	TITLE					
					QUEN	
0	F	COI	NSTR	UCI	TION	2

FST-106 01.12.011 OF CONSTRUCTION 2

170-3155



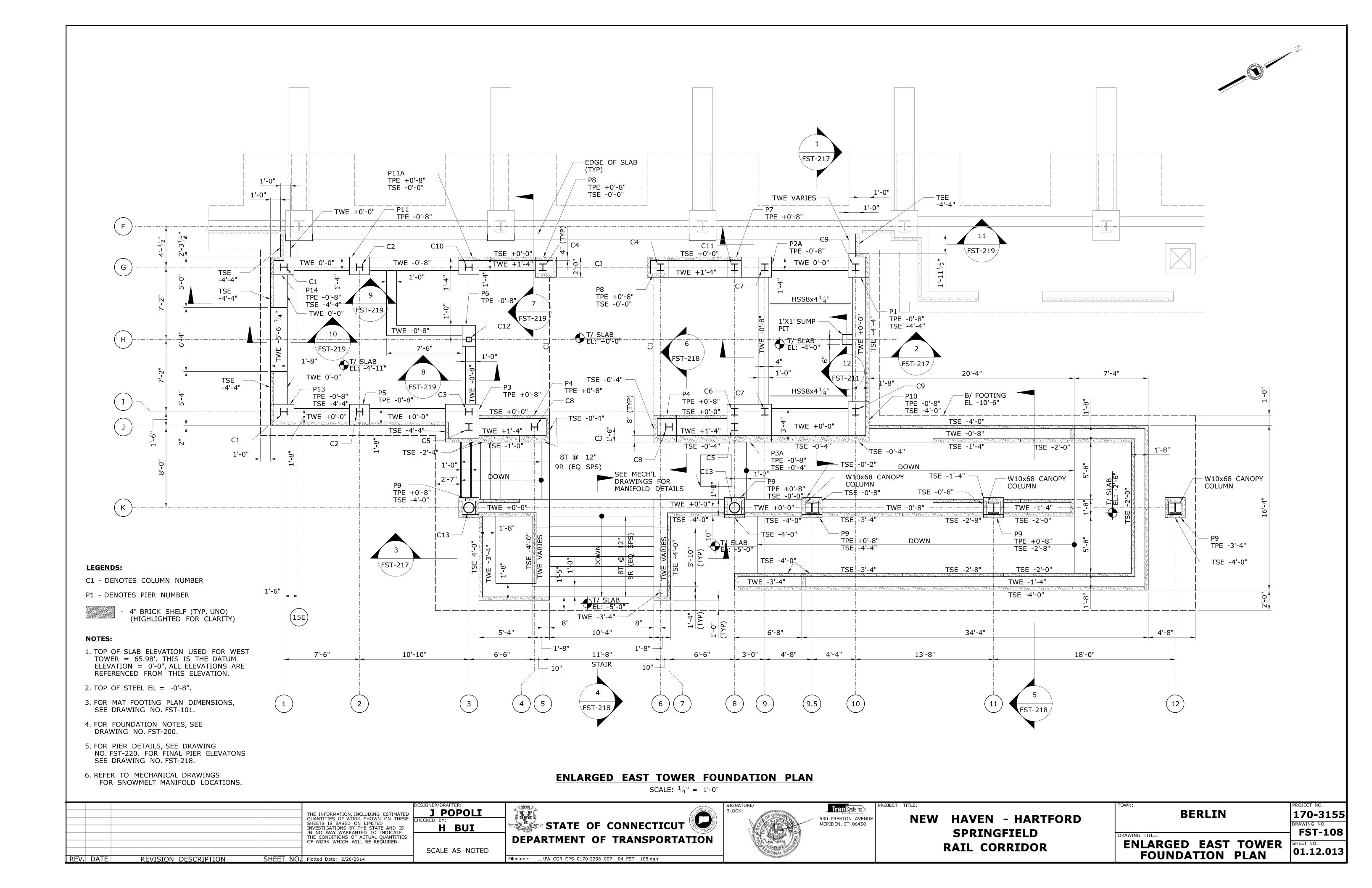
#### **ENLARGED WEST TOWER FOUNDATION PLAN**

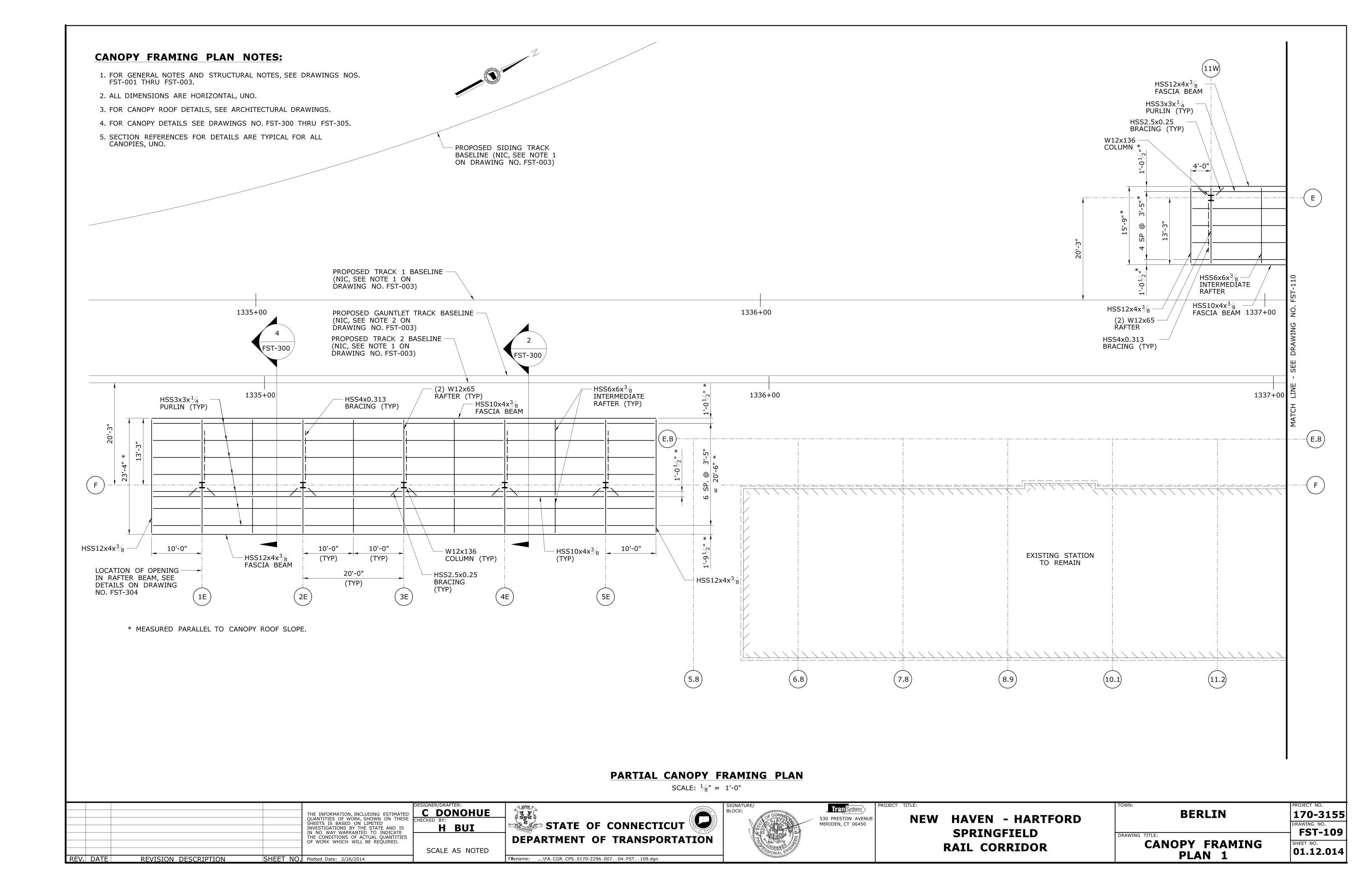
SCALE:  $\frac{1}{4}$ " = 1'-0"

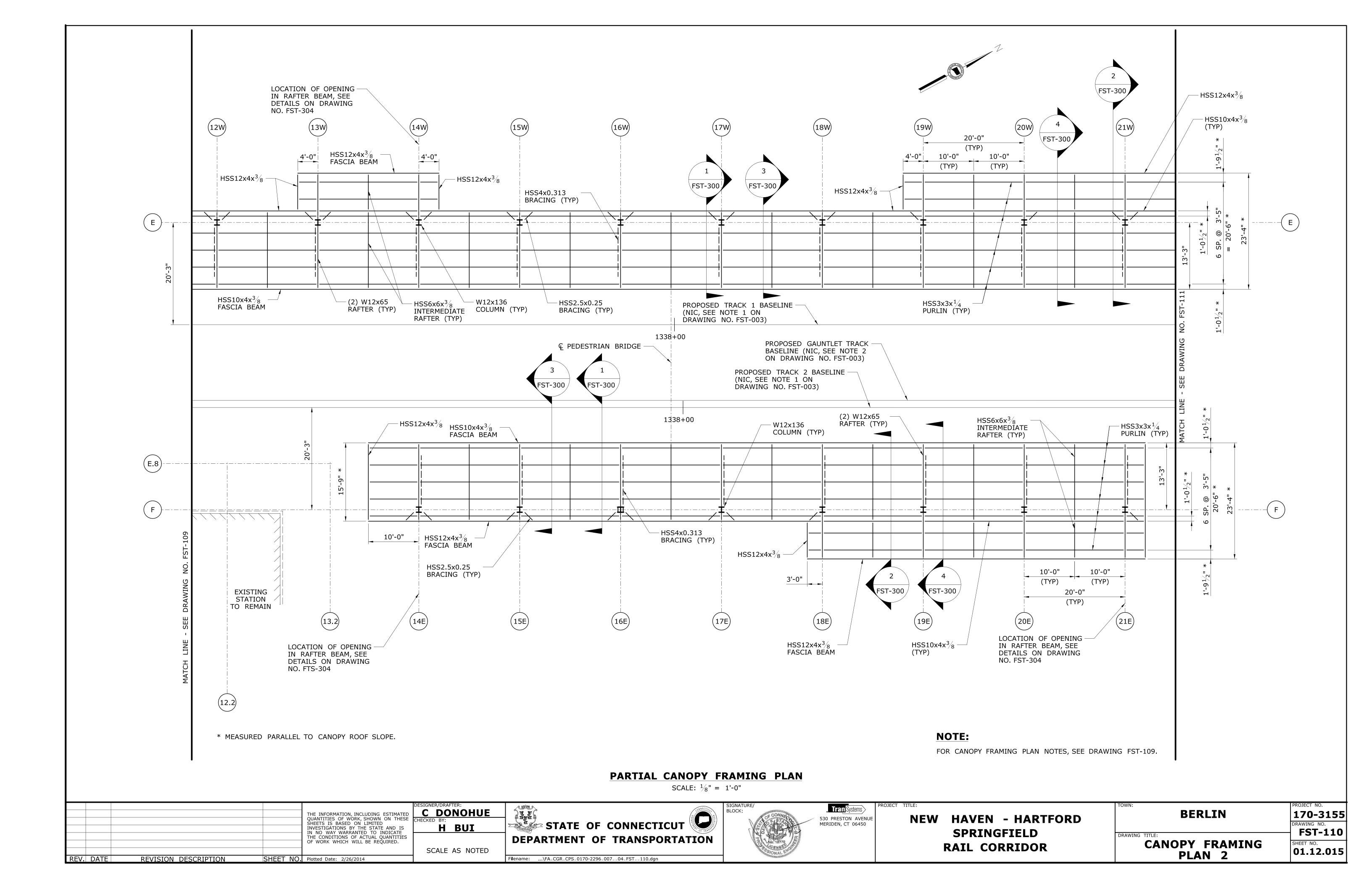
#### NOTES:

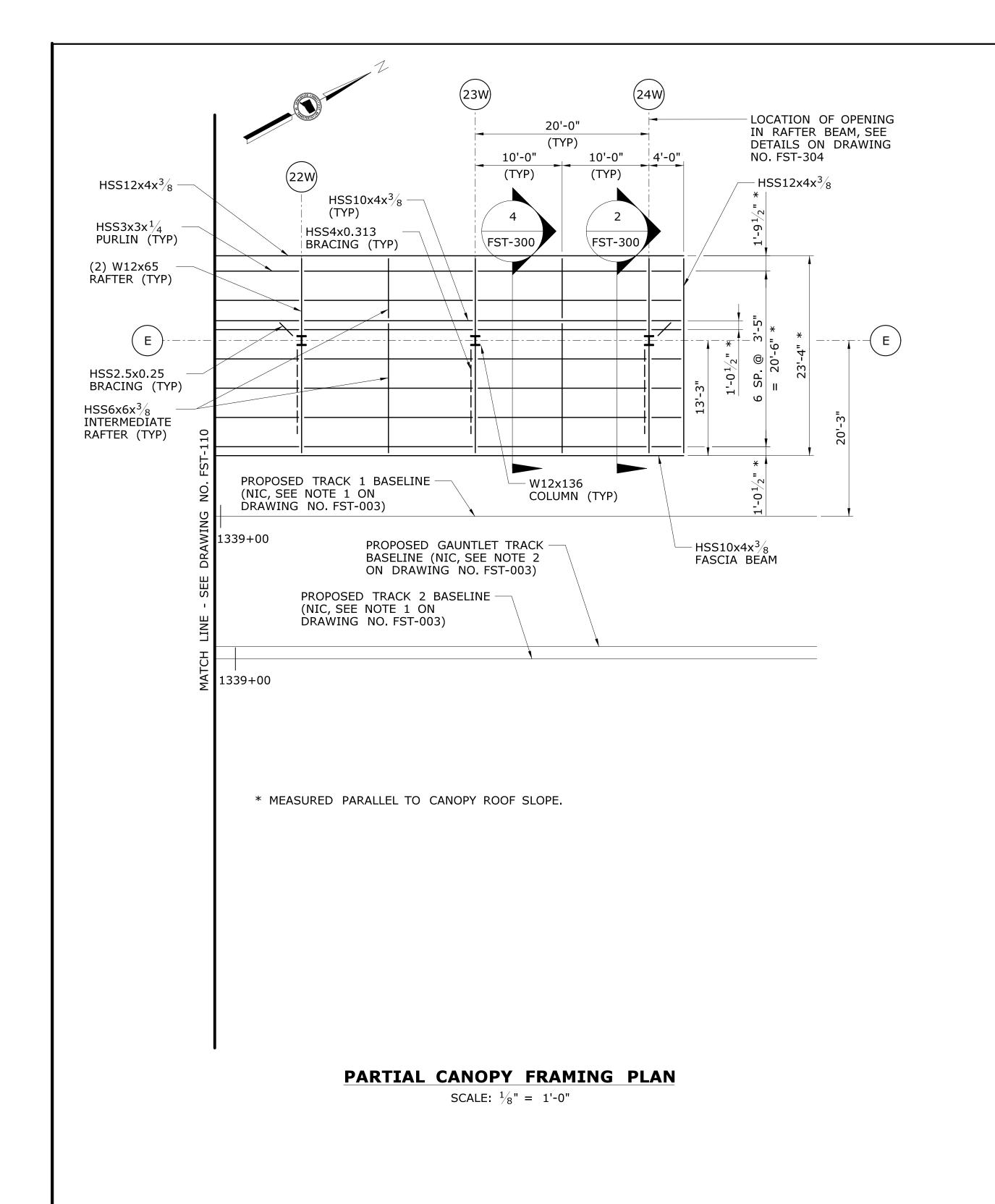
- TOP OF SLAB ELEVATION USED FOR WEST TOWER = 65.98'.
   THIS IS THE DATUM ELEVATION = 0'-0", ALL ELEVATIONS
   ARE REFERENCED FROM THIS ELEVATION.
- 2. TOP OF STEEL EL = -0'-8".
- 3. FOR MAT FOOTING PLAN DIMENSIONS, SEE DRAWING NO. FST-101.
- 4. FOR FOUNDATION NOTES, SEE DRAWING NO. FST-200.
- 5. FOR PIER DETAILS, SEE DRAWING NO. FST-220. FOR FINAL PIER ELEVATIONS SEE DRAWING NO. FST-218

	THE INFORMATION, INCLUDING ESTIMATION ON THE QUANTITIES OF WORK, SHOWN ON THE	DESIGNER/DRAFTER:  J POPOLI  CHECKED BY:	CONNECTICITY OF THE PROPERTY O	SIGNATURE/ BLOCK:  Tran Systems  530 PRESTON AVENUE	NEW HAVEN - HARTFORD	BERLIN	PROJECT NO. <b>170-3155</b>
	SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITI	H BUI	DEPARTMENT OF TRANSPORTATION	MERIDEN, CT 06450	SPRINGFIELD	DRAWING TITLE:	FST-107
	OF WORK WHICH WILL BE REQUIRED.	SCALE AS NOTED	DEPARTMENT OF TRANSPORTATION	CENSE COMMENTER OF THE PROPERTY OF THE PROPERT	RAIL CORRIDOR	ENLARGED WEST TOWER FOUNDATION PLAN	SHEET NO. <b>01.12.012</b>
REV. DATE	REVISION DESCRIPTION SHEET NO. Plotted Date: 2/26/2014		Filename:\FA_CGR_CPS_0170-2296_00704_FST107.dgn			TOUNDATION PLAN	









9.5 (12) (11)5'-0" 5'-0" 18'-0" 18'-0" - HSS14x4x<sup>3</sup>/<sub>8</sub> FASCIA BEAM HSS2.5x0.25 BRACING (TYP) FST-301 FST-301 W10x68 COLUMN 2'-1" (TYP) @ <u>-</u>9 - HSS16x16x $\frac{5}{8}$ FST-305 \FST-305 / @ <u>-</u>0 m  $HSS3x3x^{1}/_{4}$ W8x35 RAFTER HSS14x4x<sup>3</sup>/<sub>8</sub> FASCIA BEAM PURLIN (TYP) BEAM (TYP)

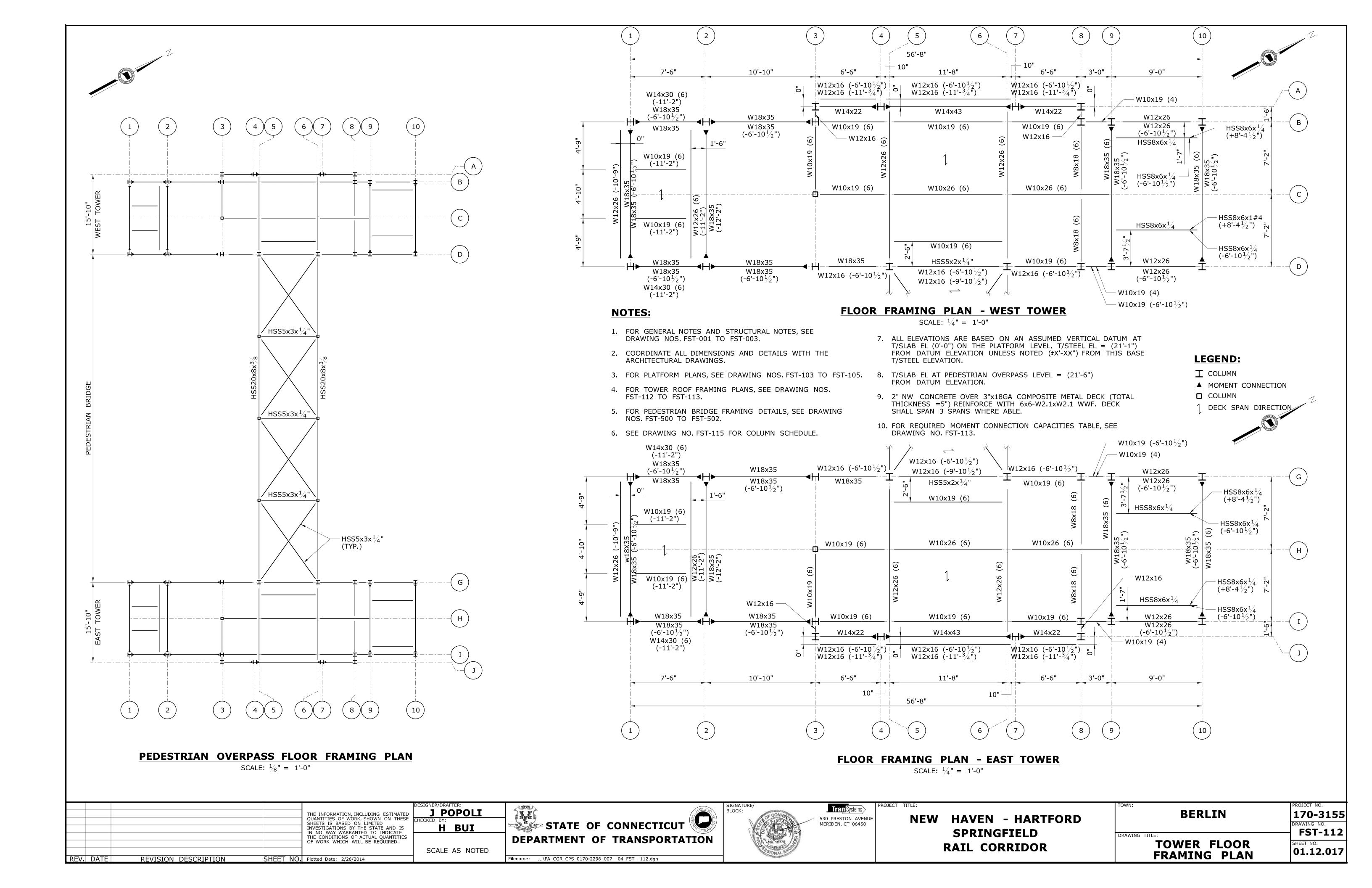
ENTRANCE CANOPY FRAMING PLAN

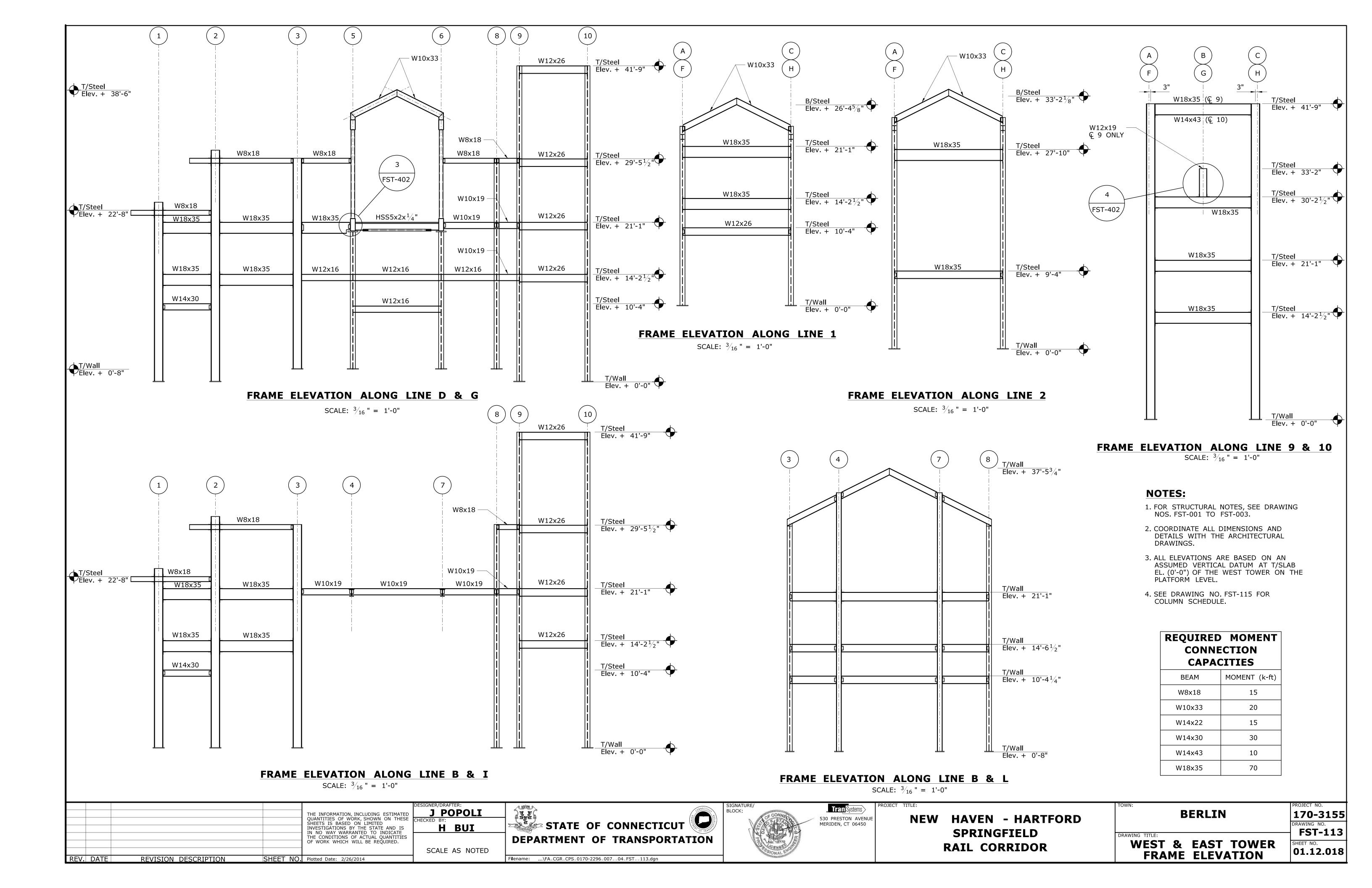
SCALE: 1/4" = 1'-0"

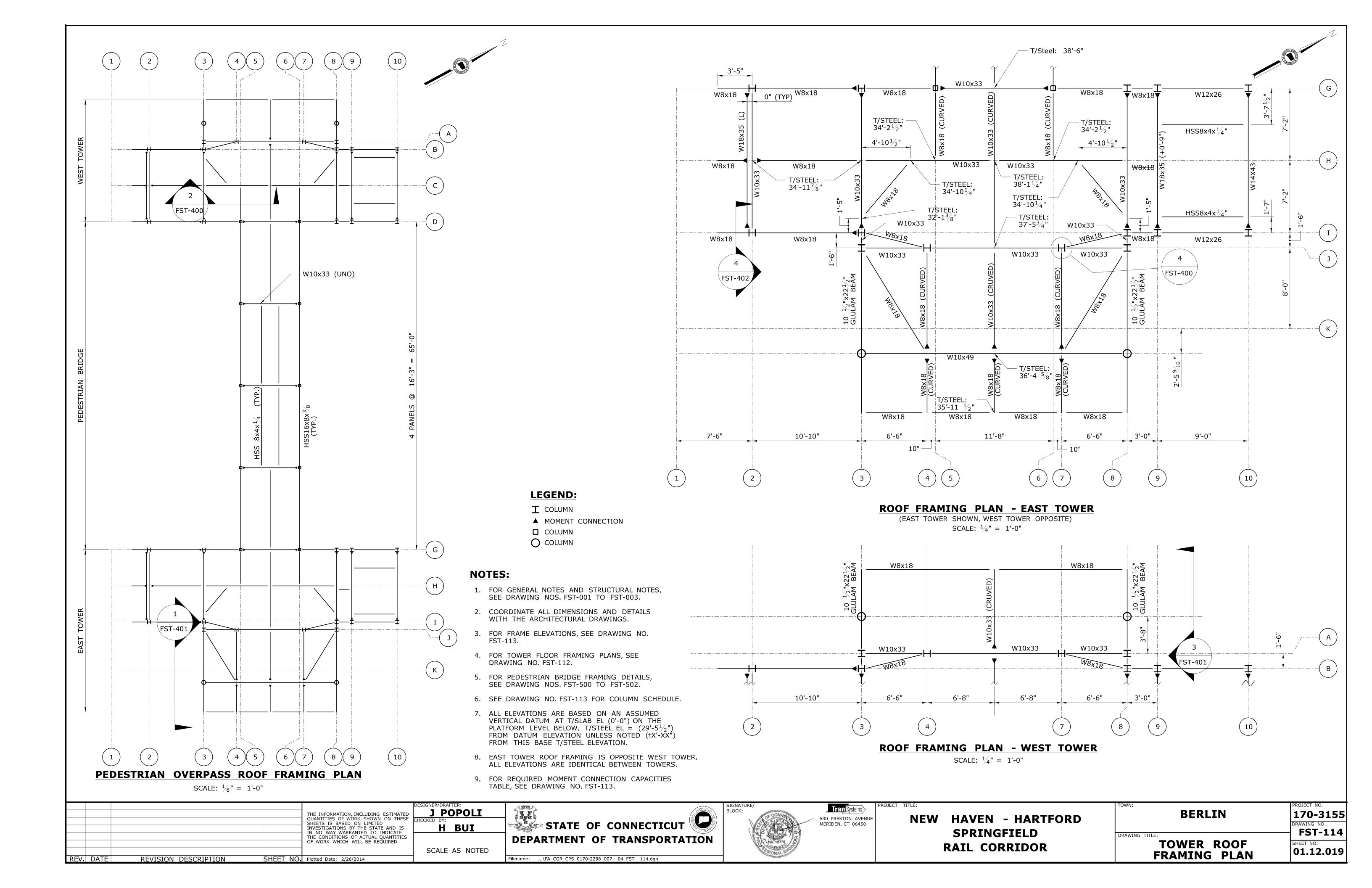
## NOTE:

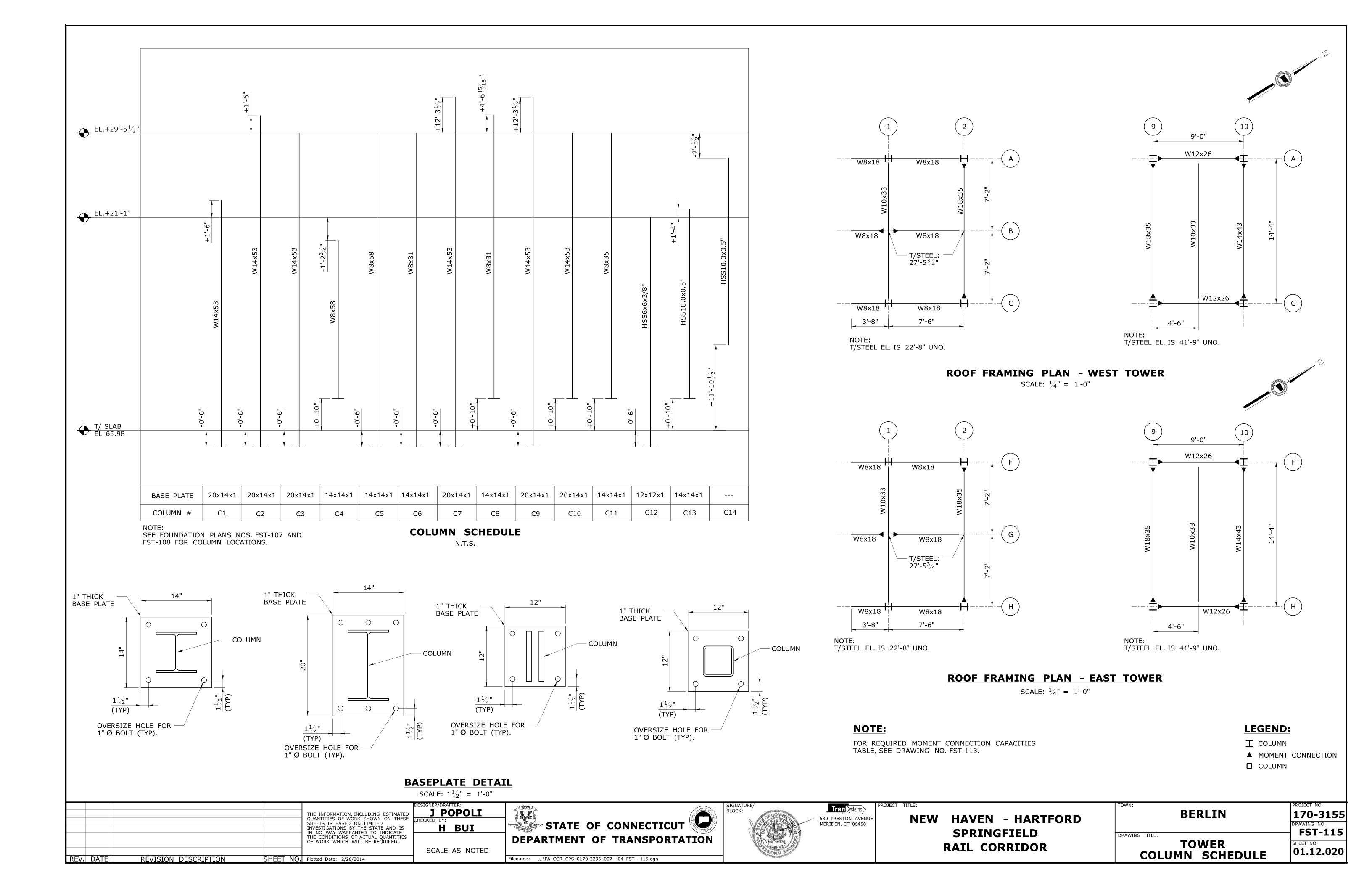
FOR CANOPY FRAMING PLAN NOTES, SEE DRAWING NO. FST-109.

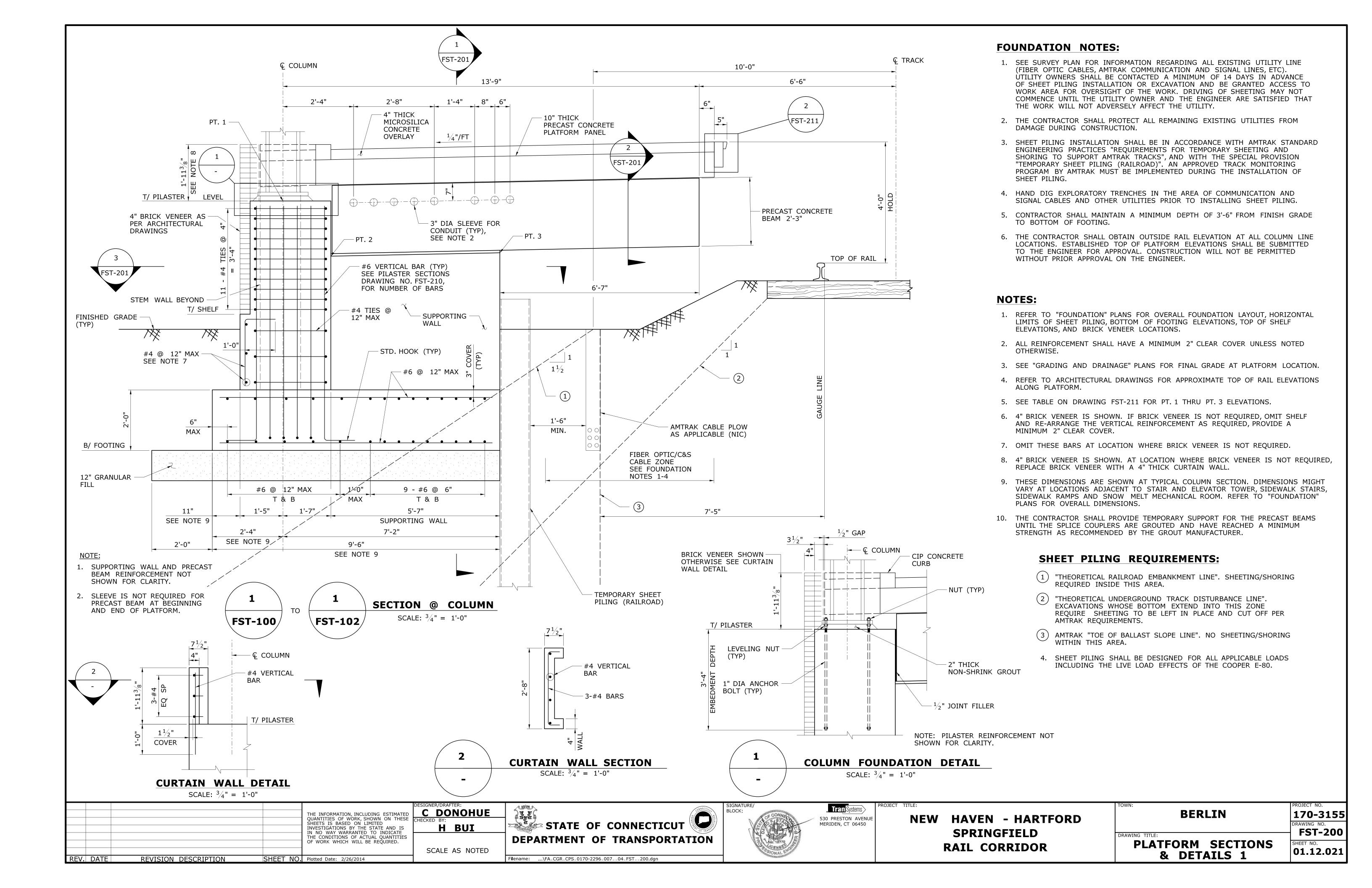
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS	C DONOHUE CHECKED BY: H BUI	STATE OF CONNECTICUT	SIGNATURE/ BLOCK:  STRIP Systems  530 PRESTON AVENUE MERIDEN, CT 06450	NEW HAVEN - HARTFORD	BERLIN	170-3155  DRAWING NO.
IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.  REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 2/26/2014	SCALE AS NOTED	DEPARTMENT OF TRANSPORTATION  Filename:\FA_CGR_CPS_0170-2296_00704_FST111.dgn	CENS SIONAL	SPRINGFIELD RAIL CORRIDOR	CANOPY FRAMING PLAN 3	FST-111 SHEET NO. 01.12.016

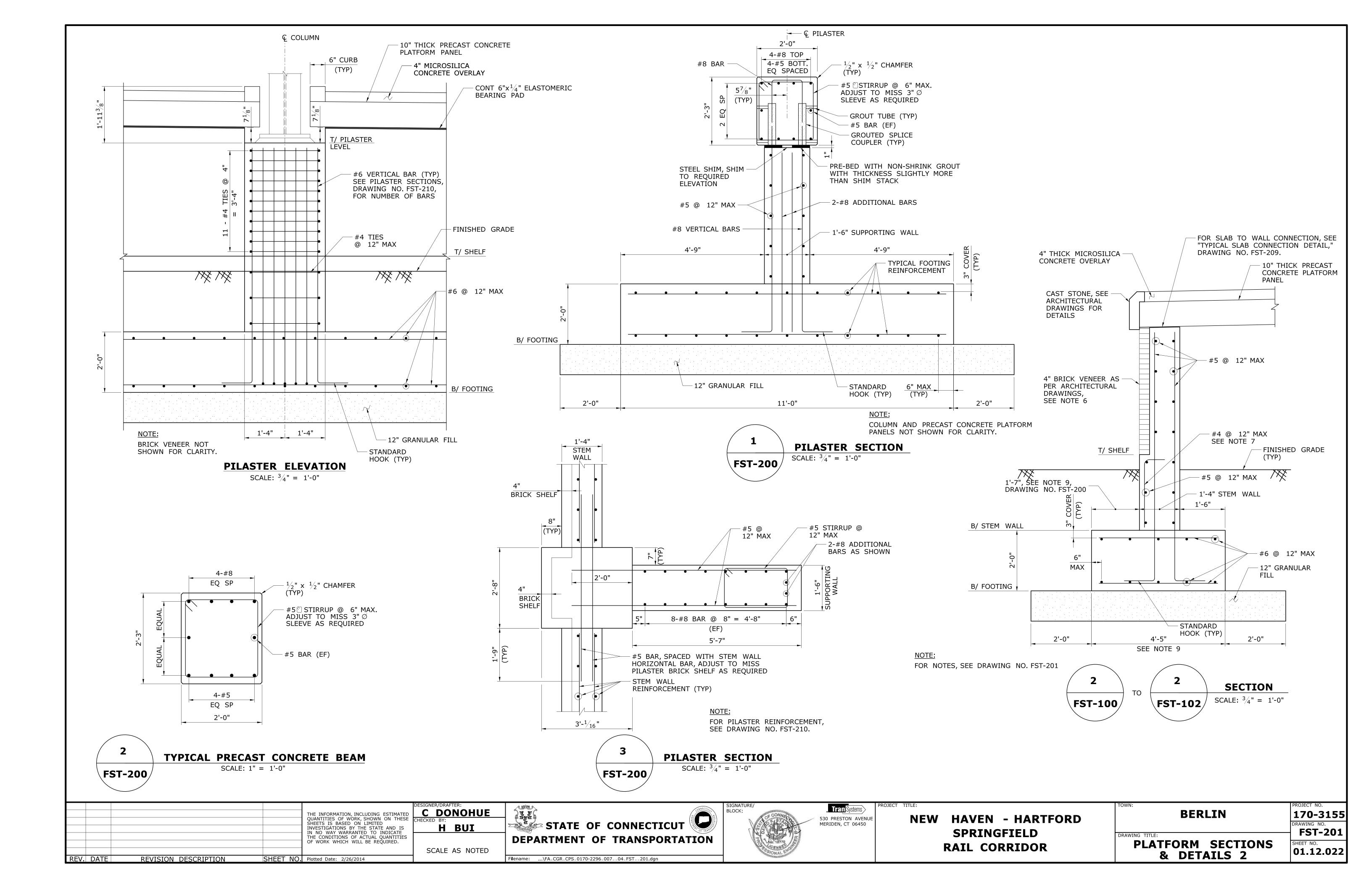


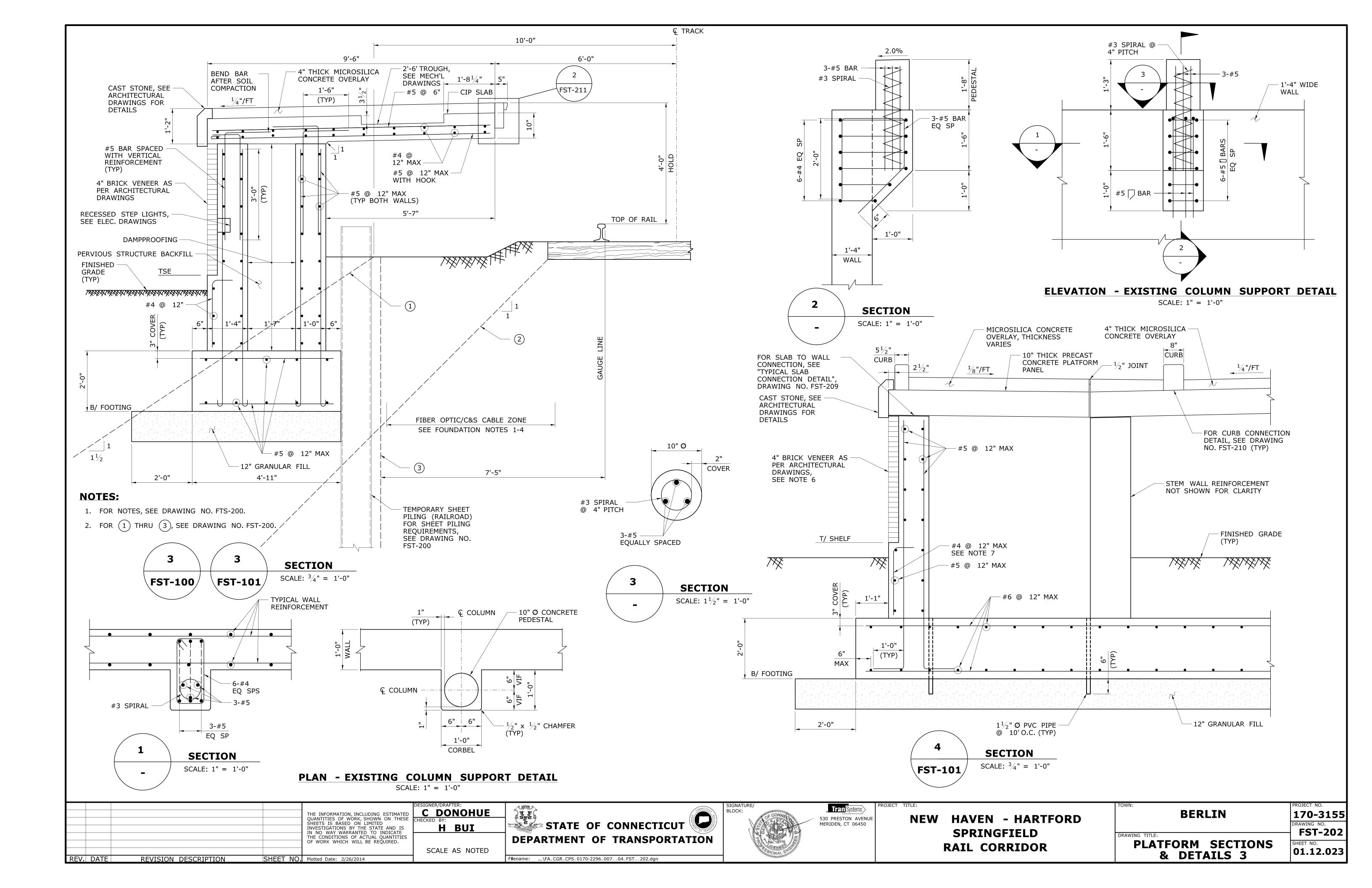


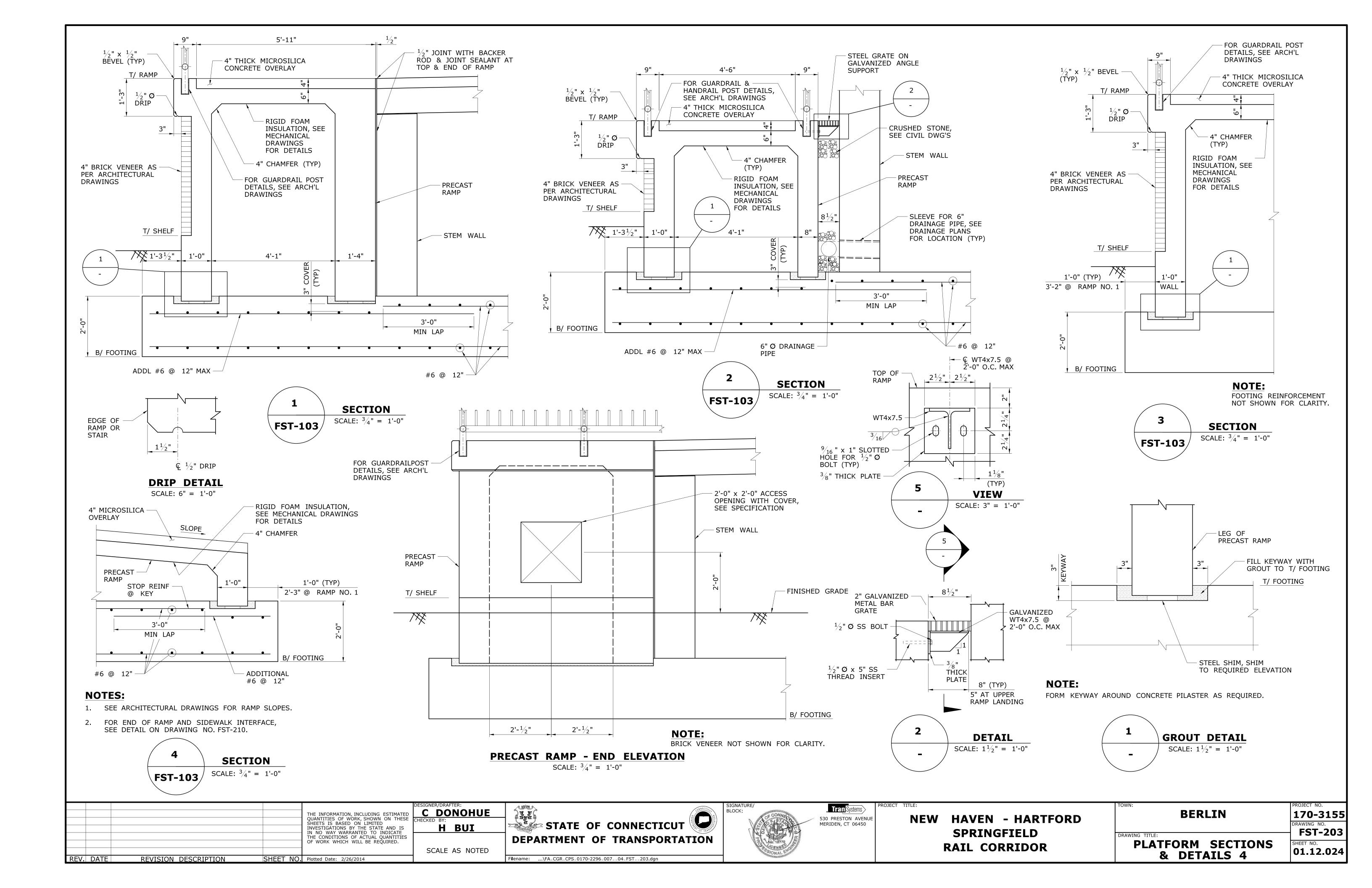


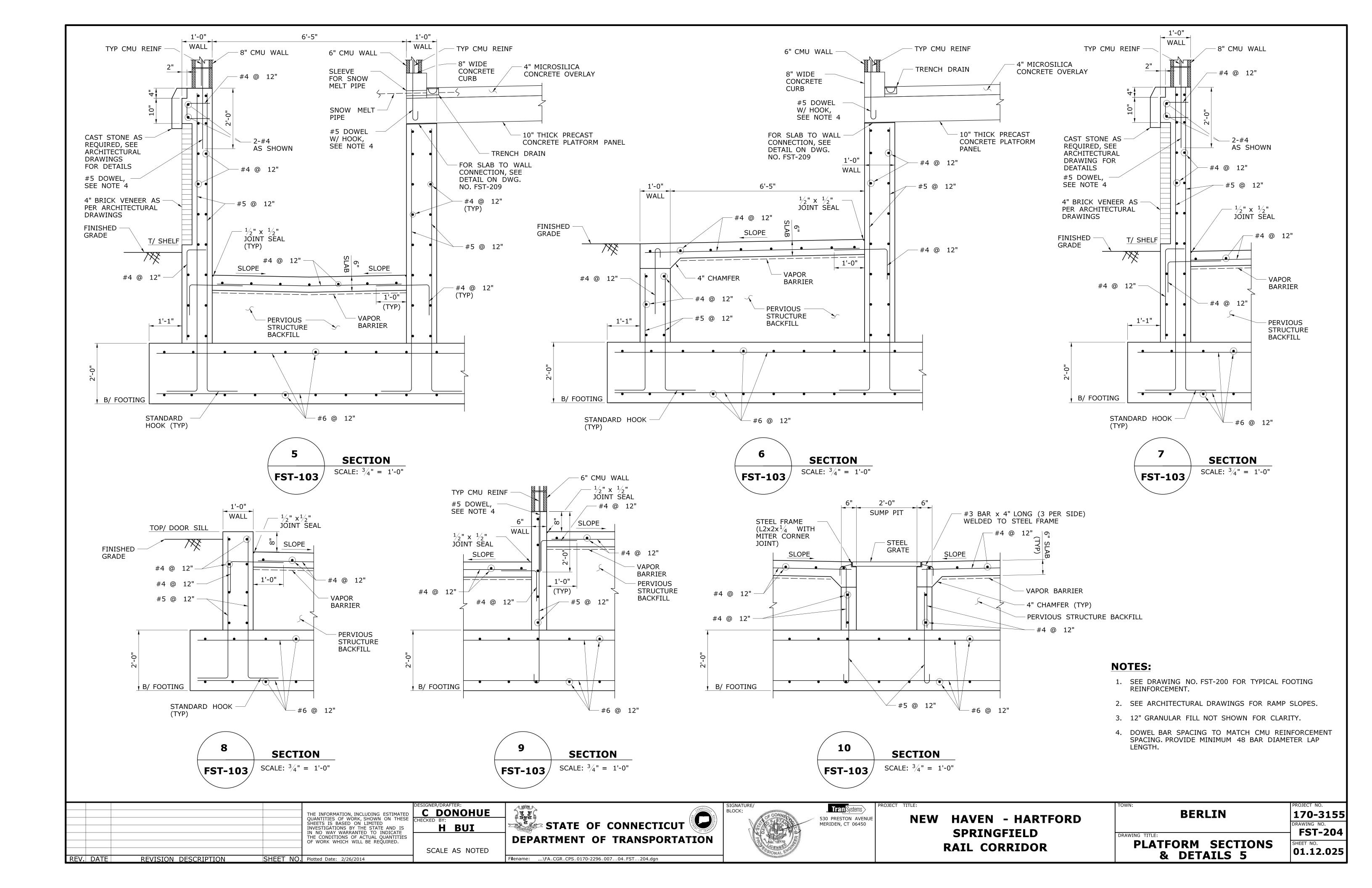


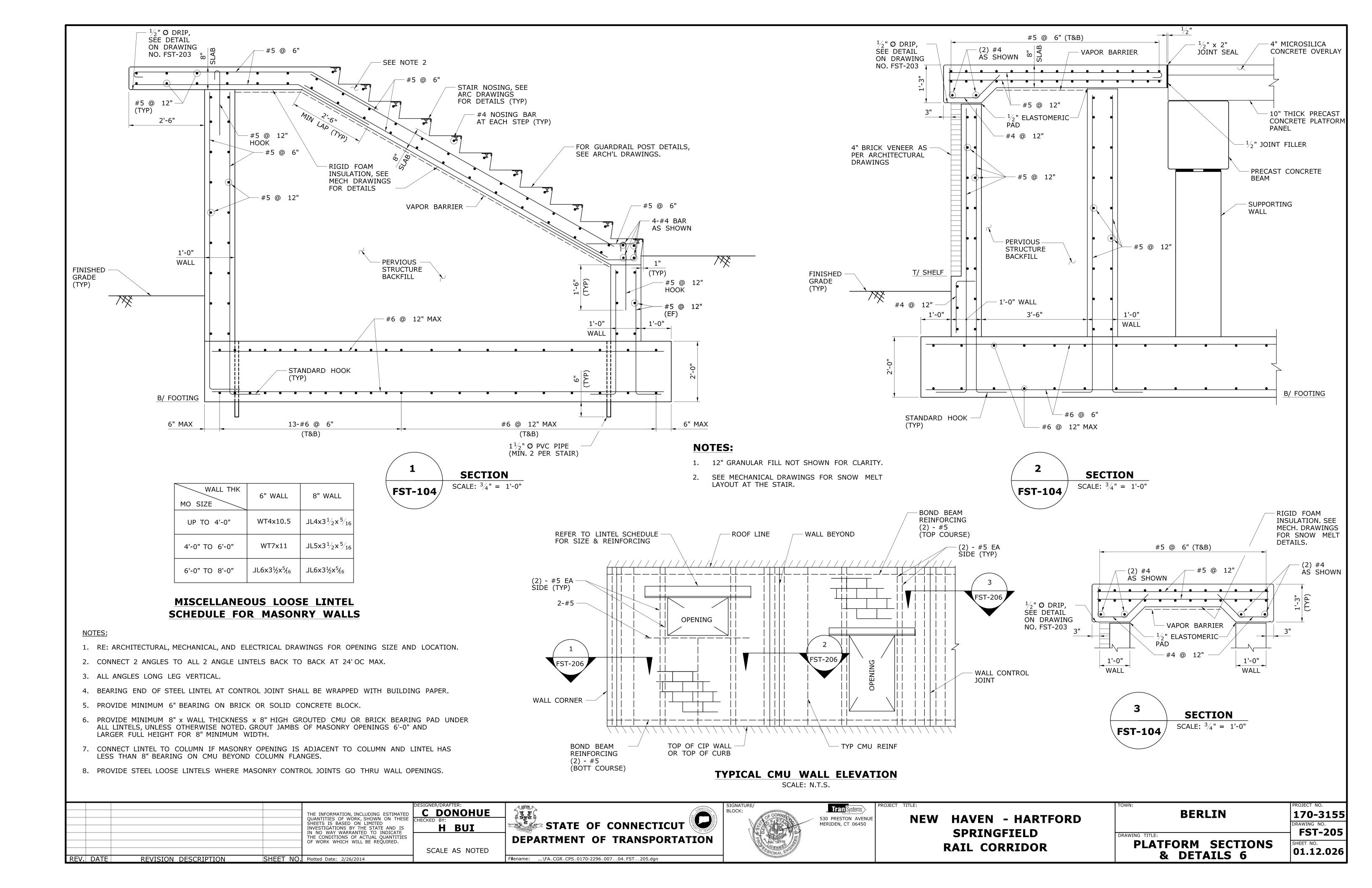


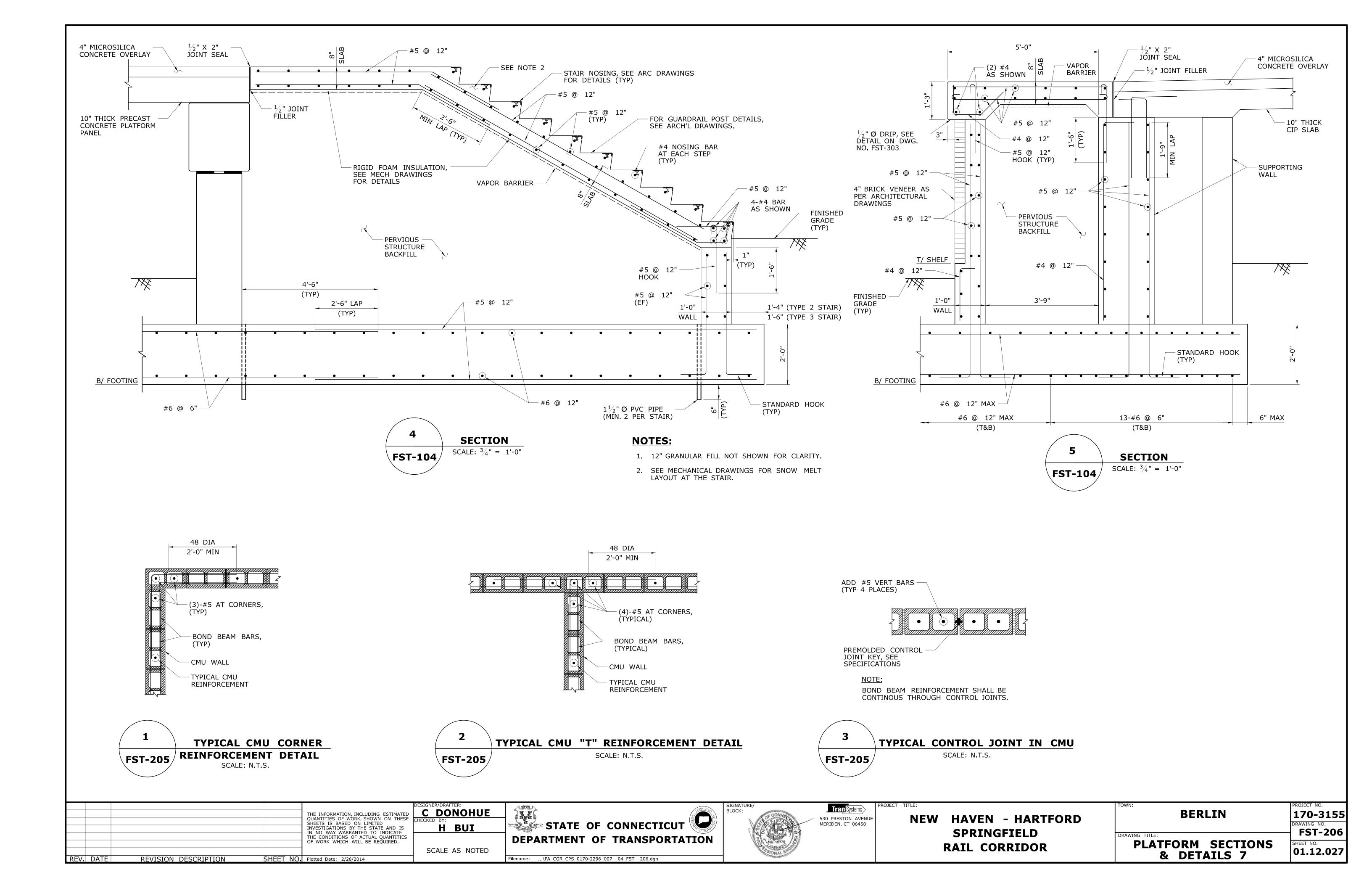


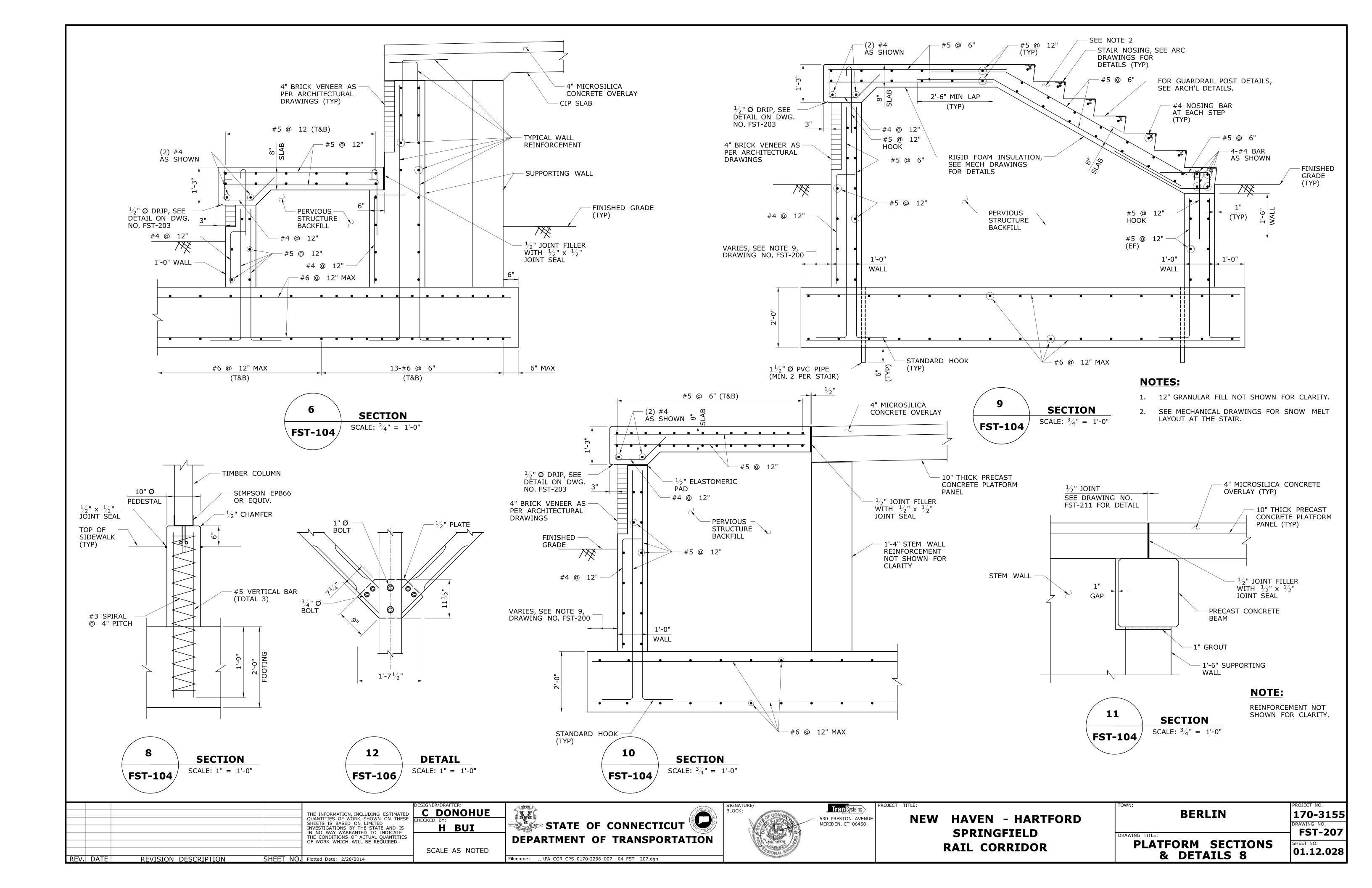


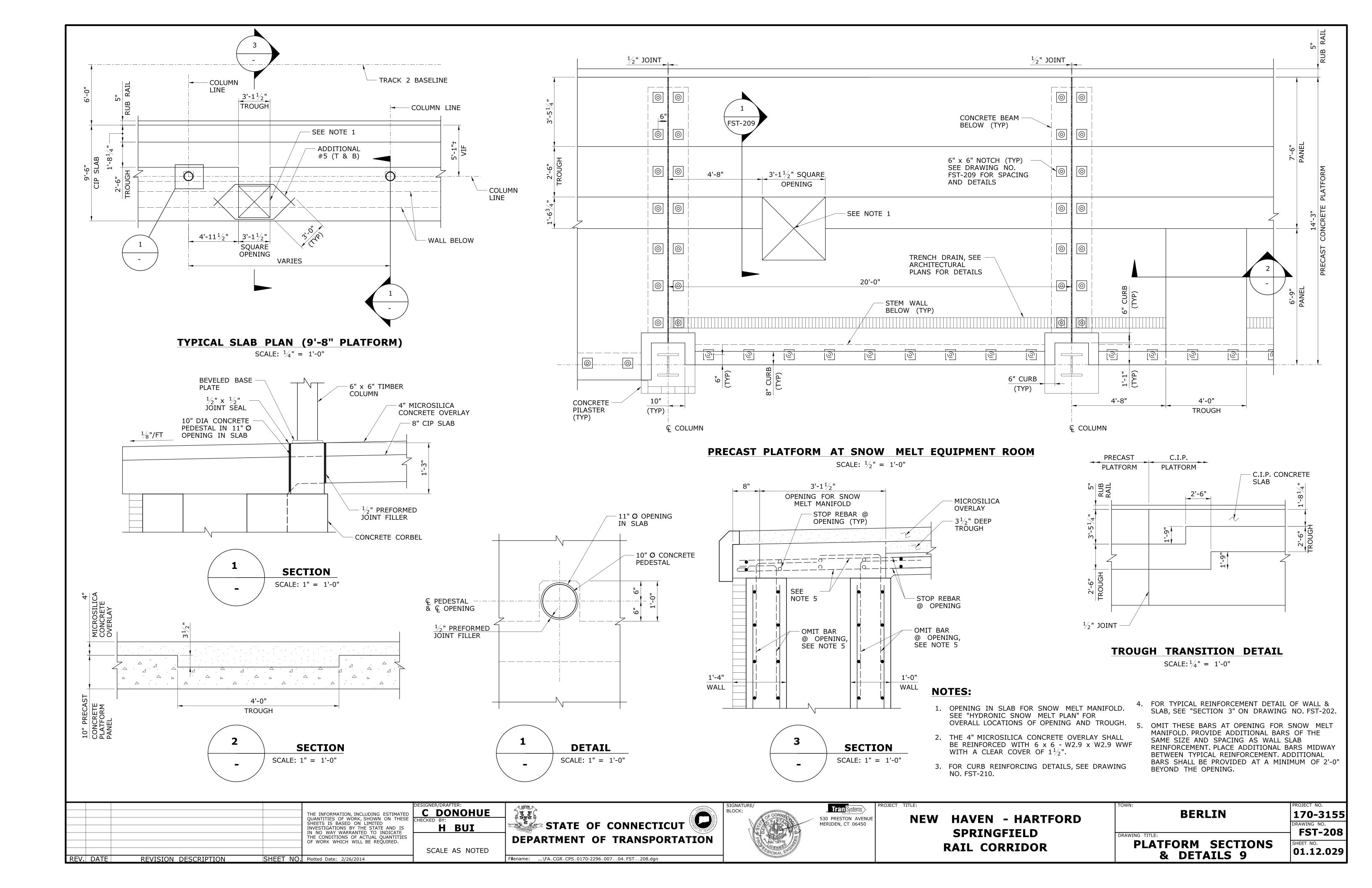


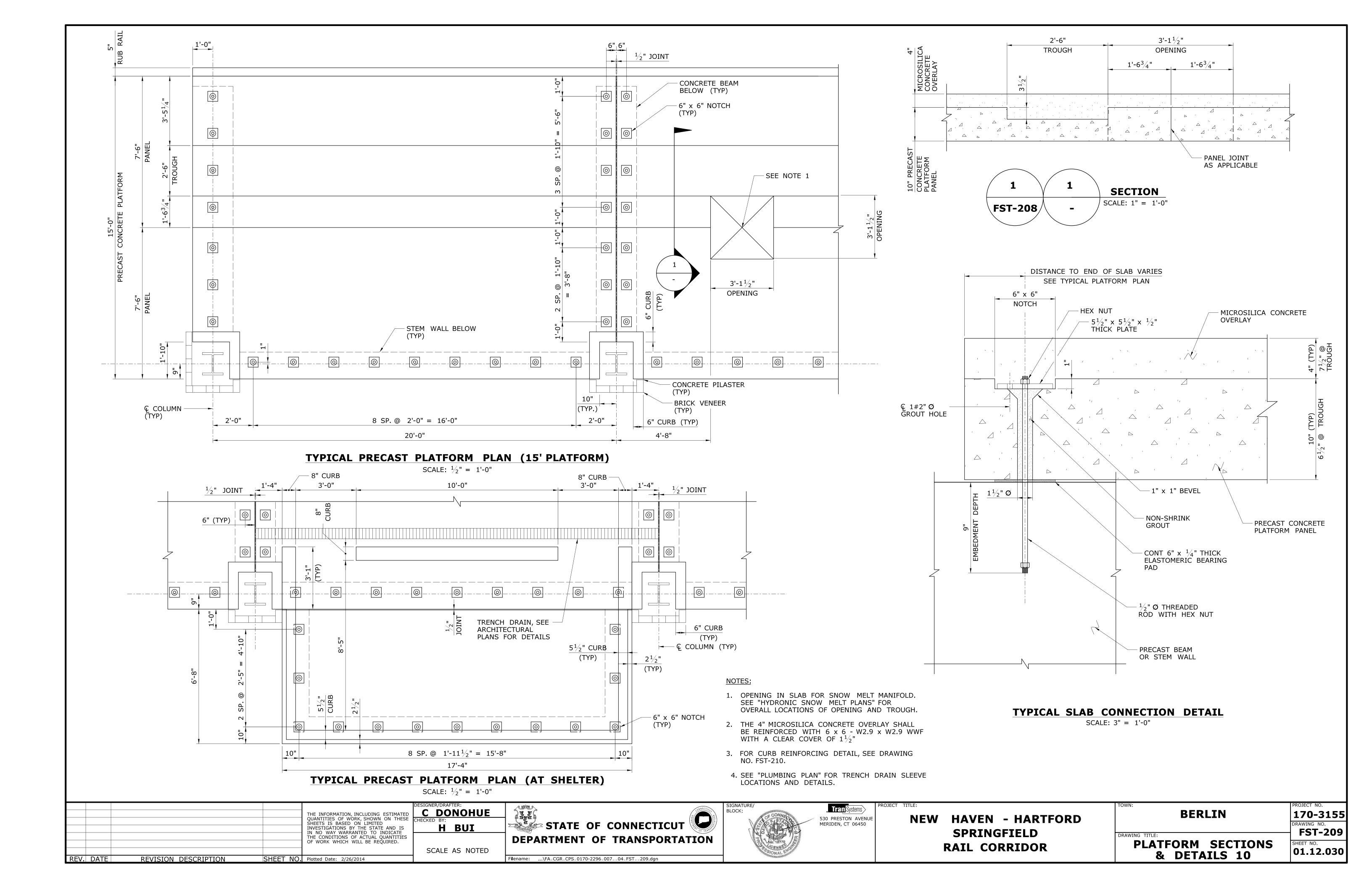


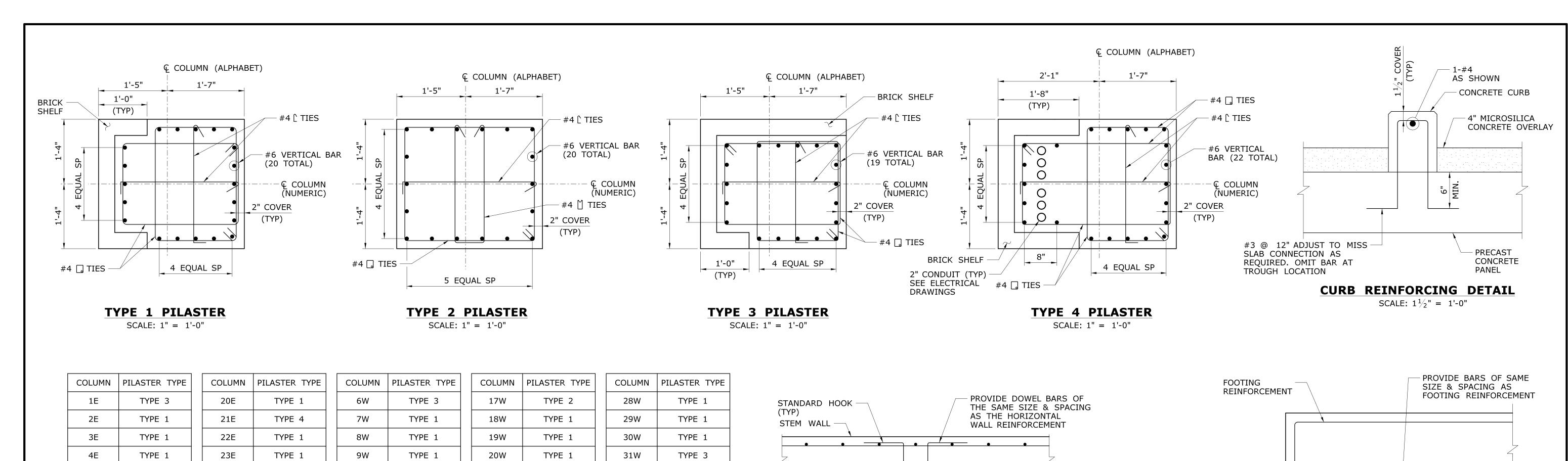


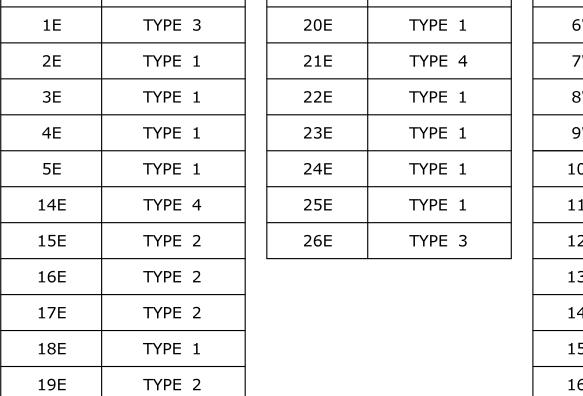




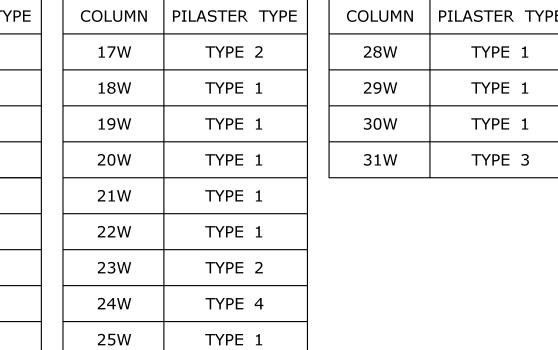


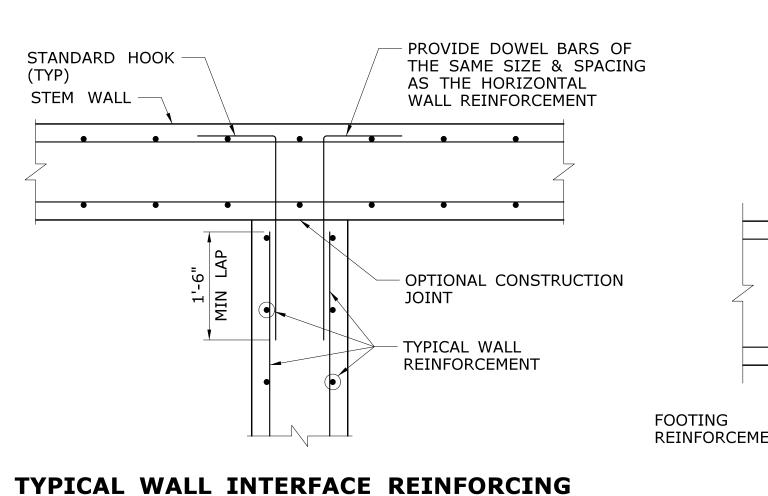




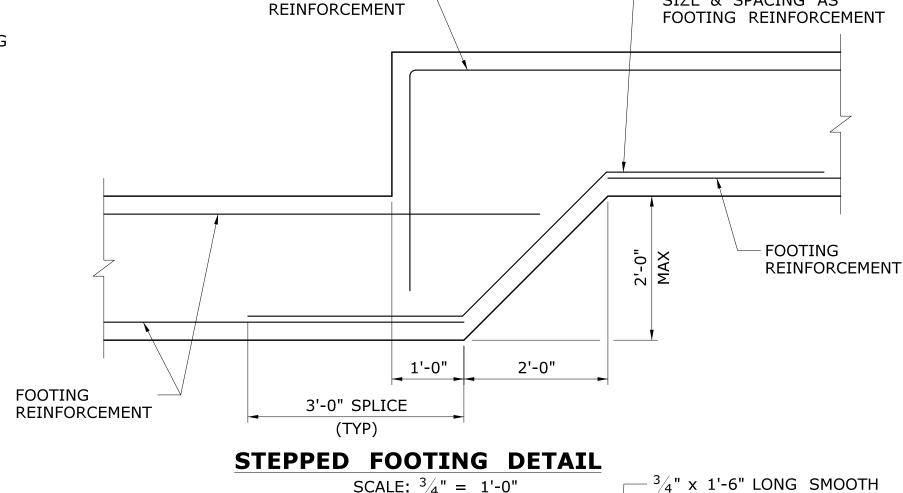


COLUMN	PILASTER TYPE	COLUMN	PILASTER TYPE
6W	TYPE 3	17W	TYPE 2
7W	TYPE 1	18W	TYPE 1
8W	TYPE 1	19W	TYPE 1
9W	TYPE 1	20W	TYPE 1
10W	TYPE 1	21W	TYPE 1
11W	TYPE 1	22W	TYPE 1
12W	TYPE 1	23W	TYPE 2
13W	TYPE 1	24W	TYPE 4
14W	TYPE 4	25W	TYPE 1
15W	TYPE 2	26W	TYPE 1
16W	TYPE 2	27W	TYPE 1

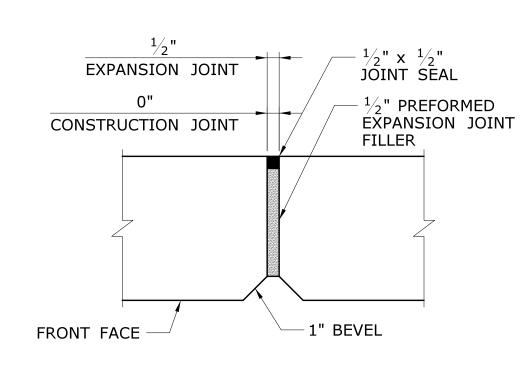




SCALE:  $\frac{3}{4}$ " = 1'-0"

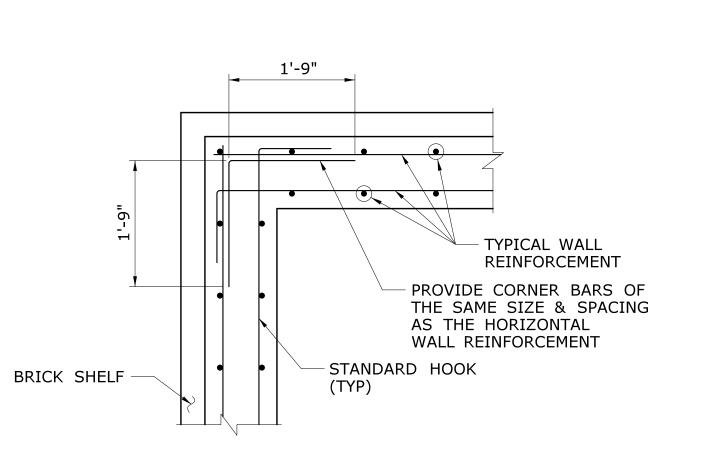


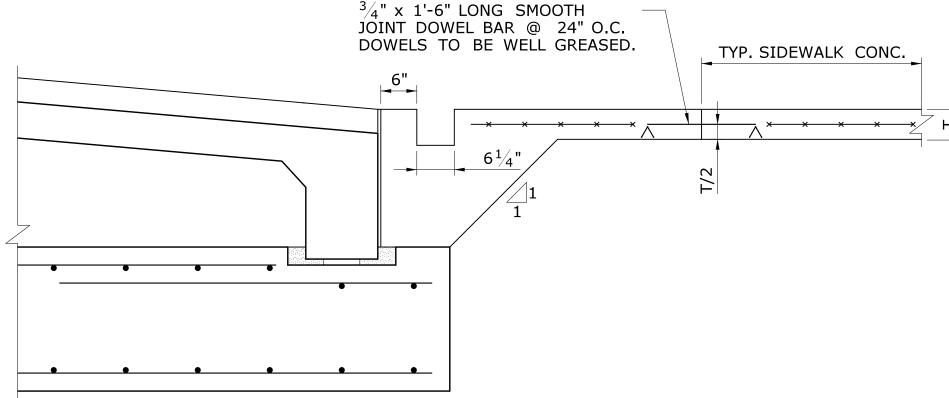
SCALE:  $\frac{3}{4}$ " = 1'-0"



#### **NOTES:**

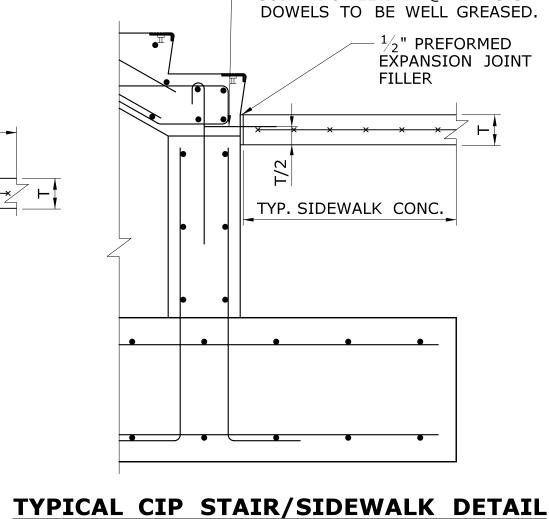
- 1. JOINT SEAL TO EXTEND FROM TOP OF FOOTING TO TOP OF WALL.
- 2. NO REINFORCEMENT SHALL PASS THROUGH EXPANSION JOINTS. REINFORCEMENT SHALL PASS THROUGH CONSTRUCTION JOINTS.
- 3. JOINT SEAL AND PREFORM EXPANSION JOINT FILLER SHALL BE INCLUDED IN THE CONCRETE ITEM.





TYPICAL PRECAST RAMP/SIDEWALK DETAIL

SCALE:  $\frac{3}{4}$ " = 1'-0"



JOINT DOWEL BAR @ 24" O.C.

## **VERTICAL STEM JOINT DETAIL**

SCALE: 3'' = 1'-0''

## TYPICAL WALL CORNER REINFORCING

SCALE:  $\frac{3}{4}$ " = 1'-0"

					THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.
REV.	DATE	REVISION DESCRIPTION	SHEET	NO.	Plotted Date: 2/26/2014

C DONOHUE H BUI SCALE AS NOTED

STATE OF CONNECTICUT

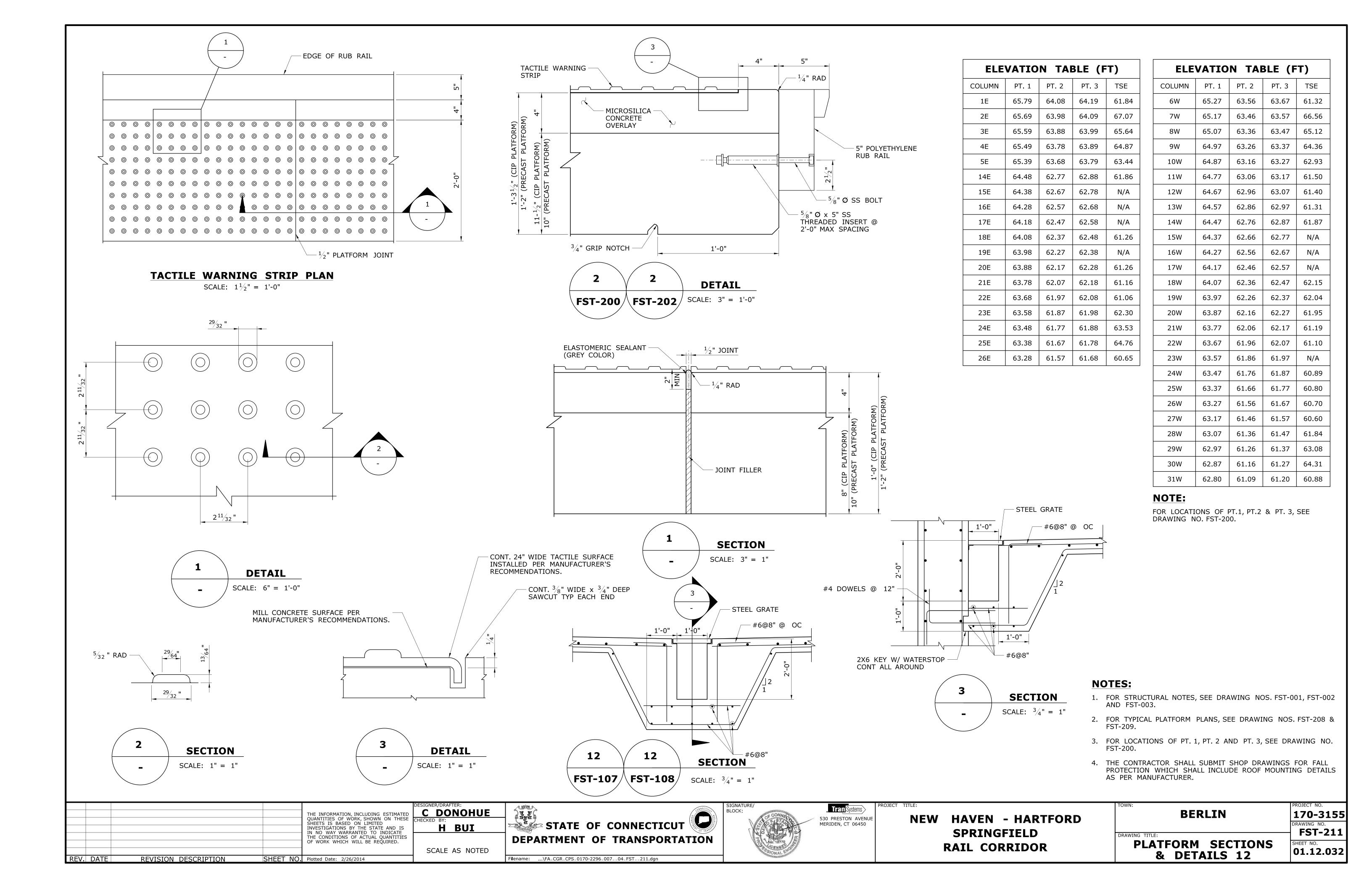


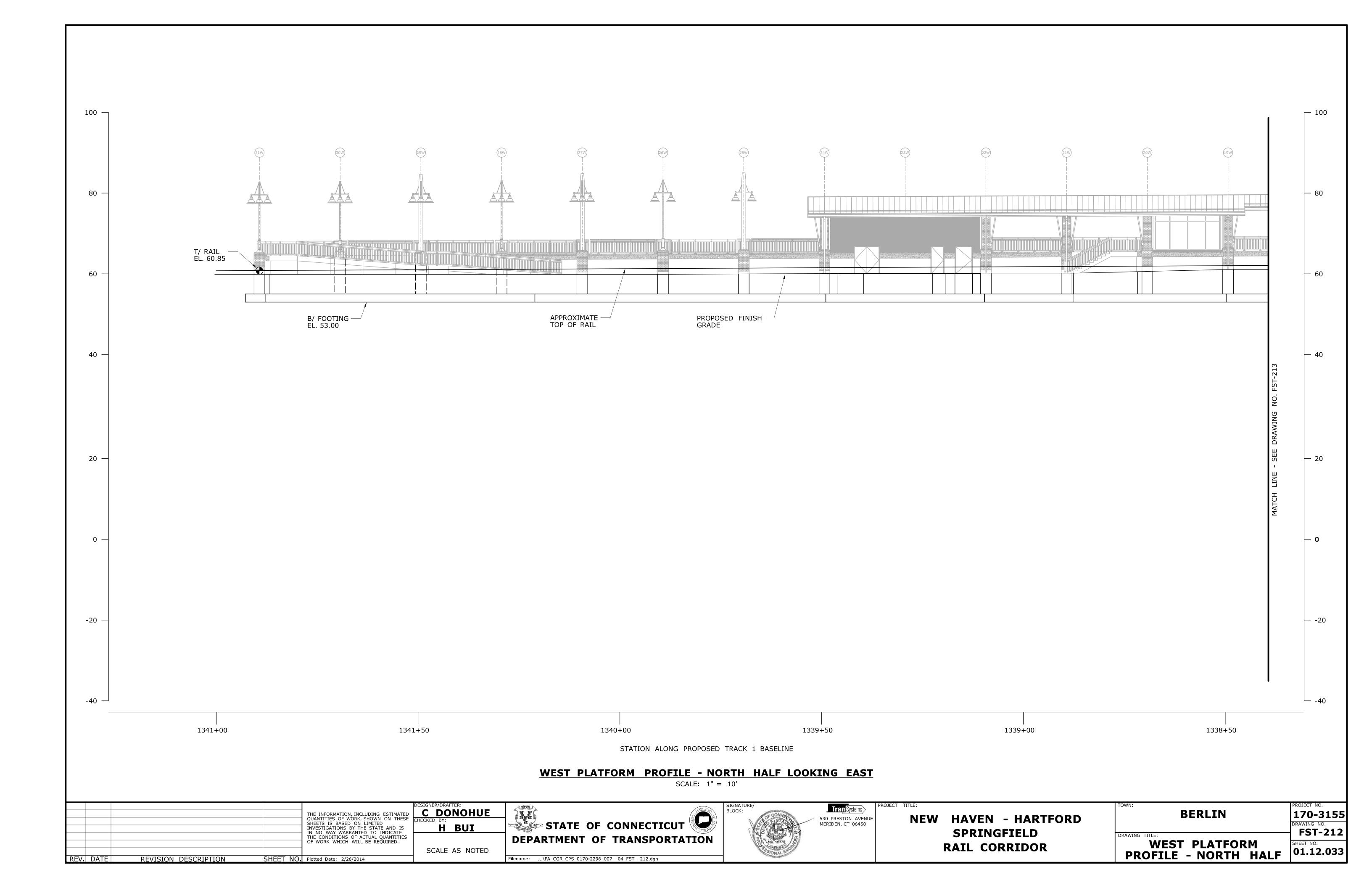
**NEW HAVEN - HARTFORD SPRINGFIELD** 

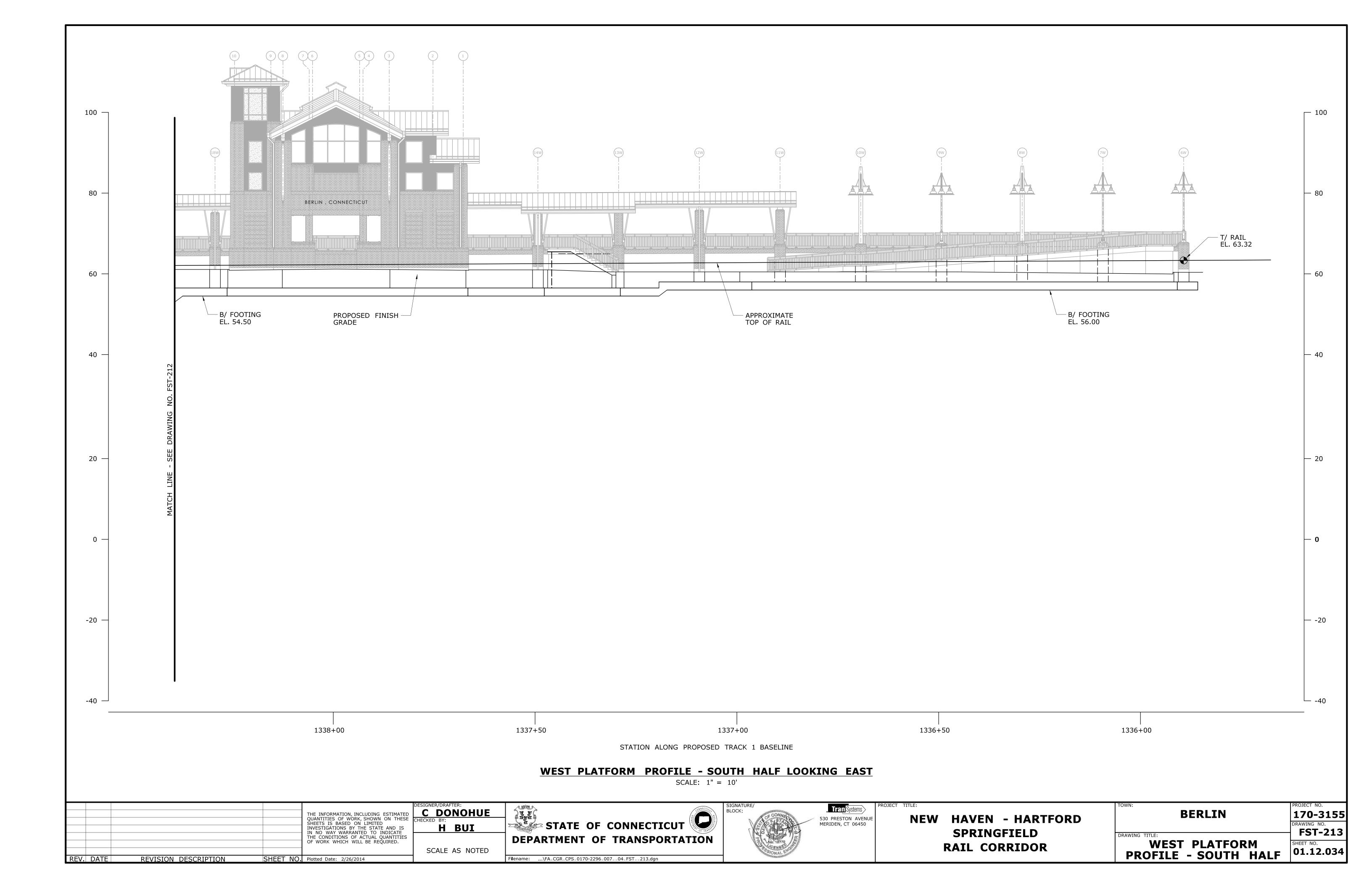
**BERLIN** 170-3155

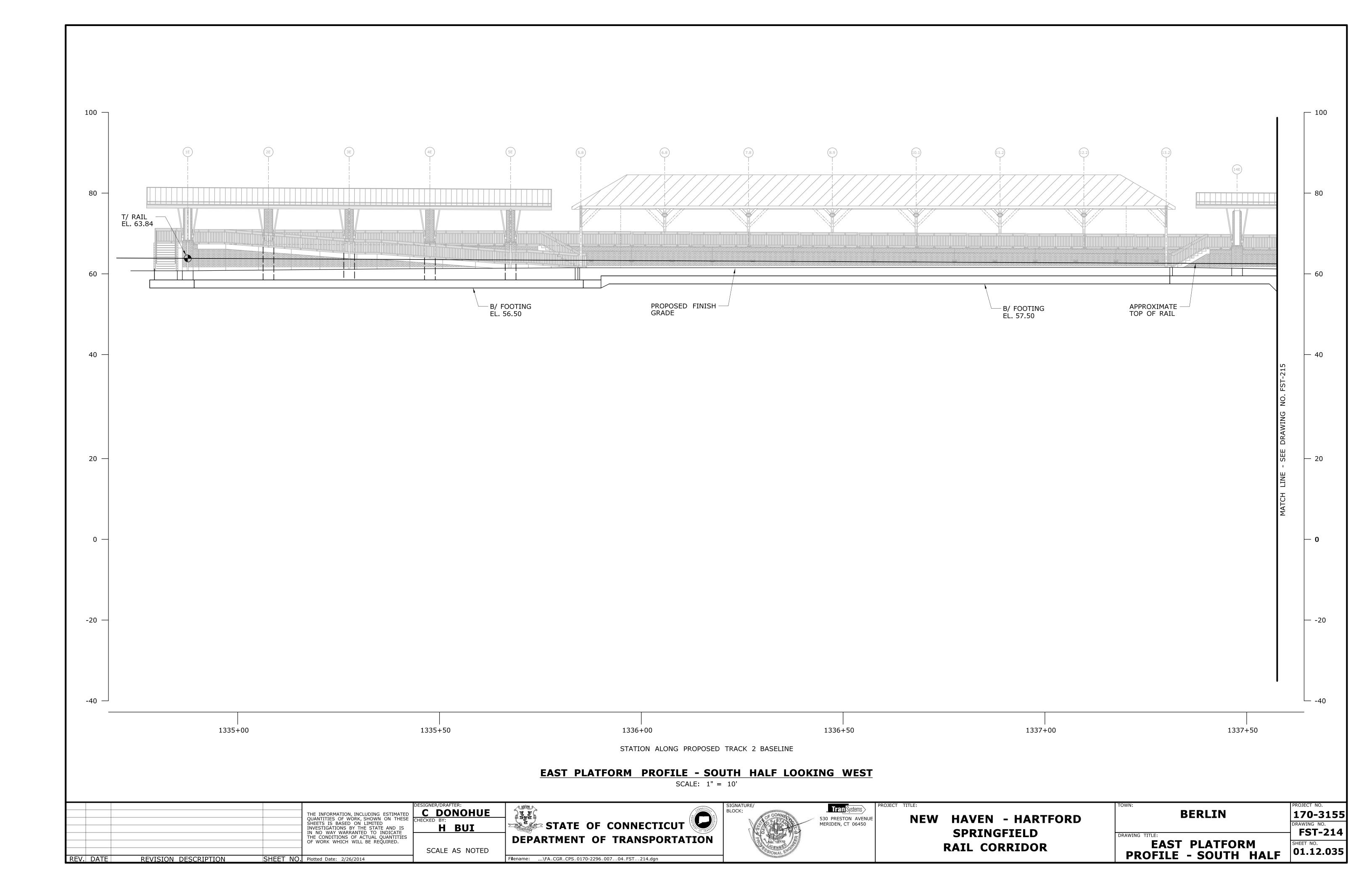
SCALE:  $\frac{3}{4}$ " = 1'-0"

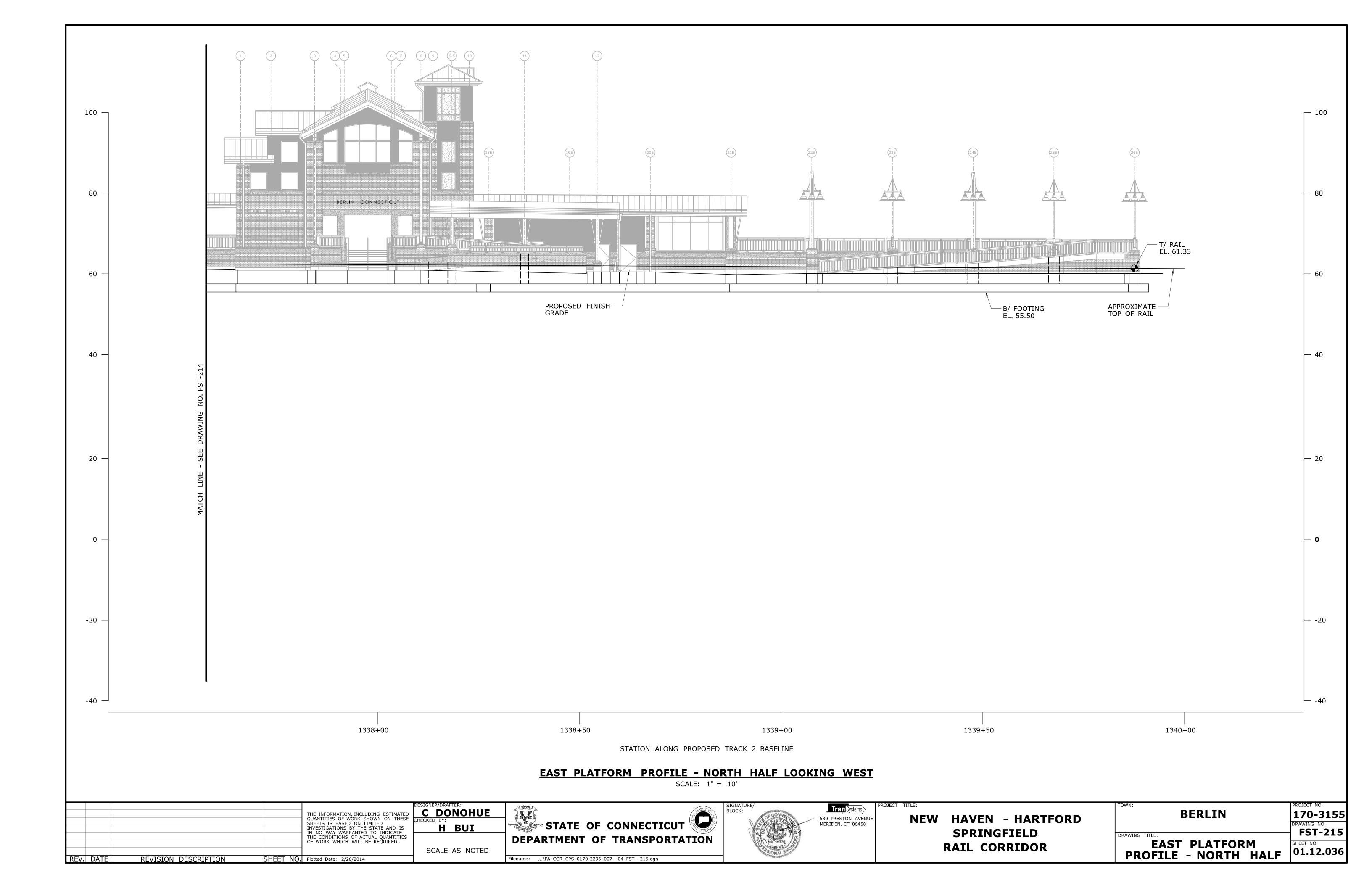
FST-210 **DEPARTMENT OF TRANSPORTATION** PLATFORM SECTIONS RAIL CORRIDOR 01.12.031 & DETAILS 11 Filename: ...\FA\_CGR\_CPS\_0170-2296\_007\_\_04\_FST\_\_210.dgn

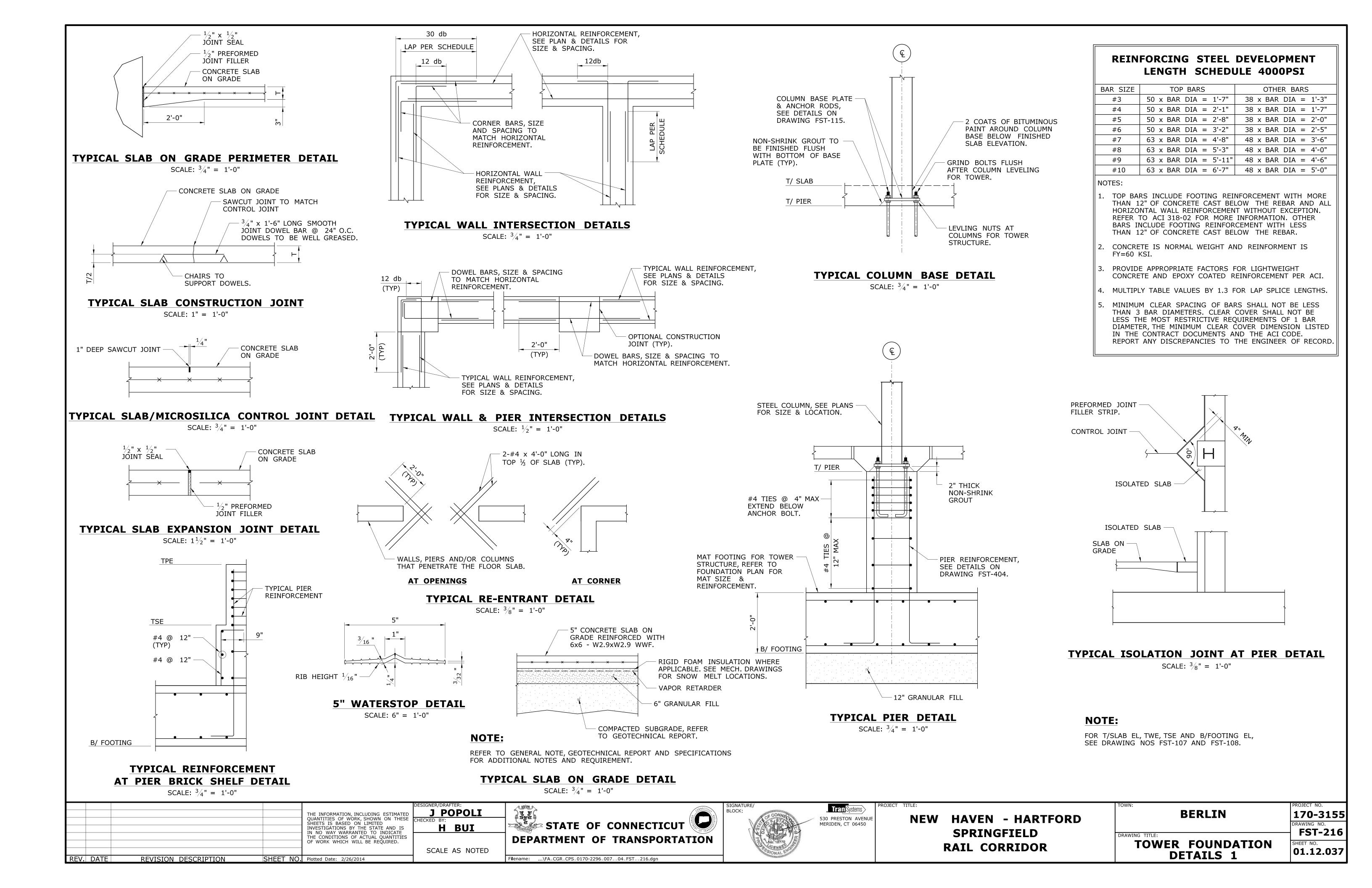


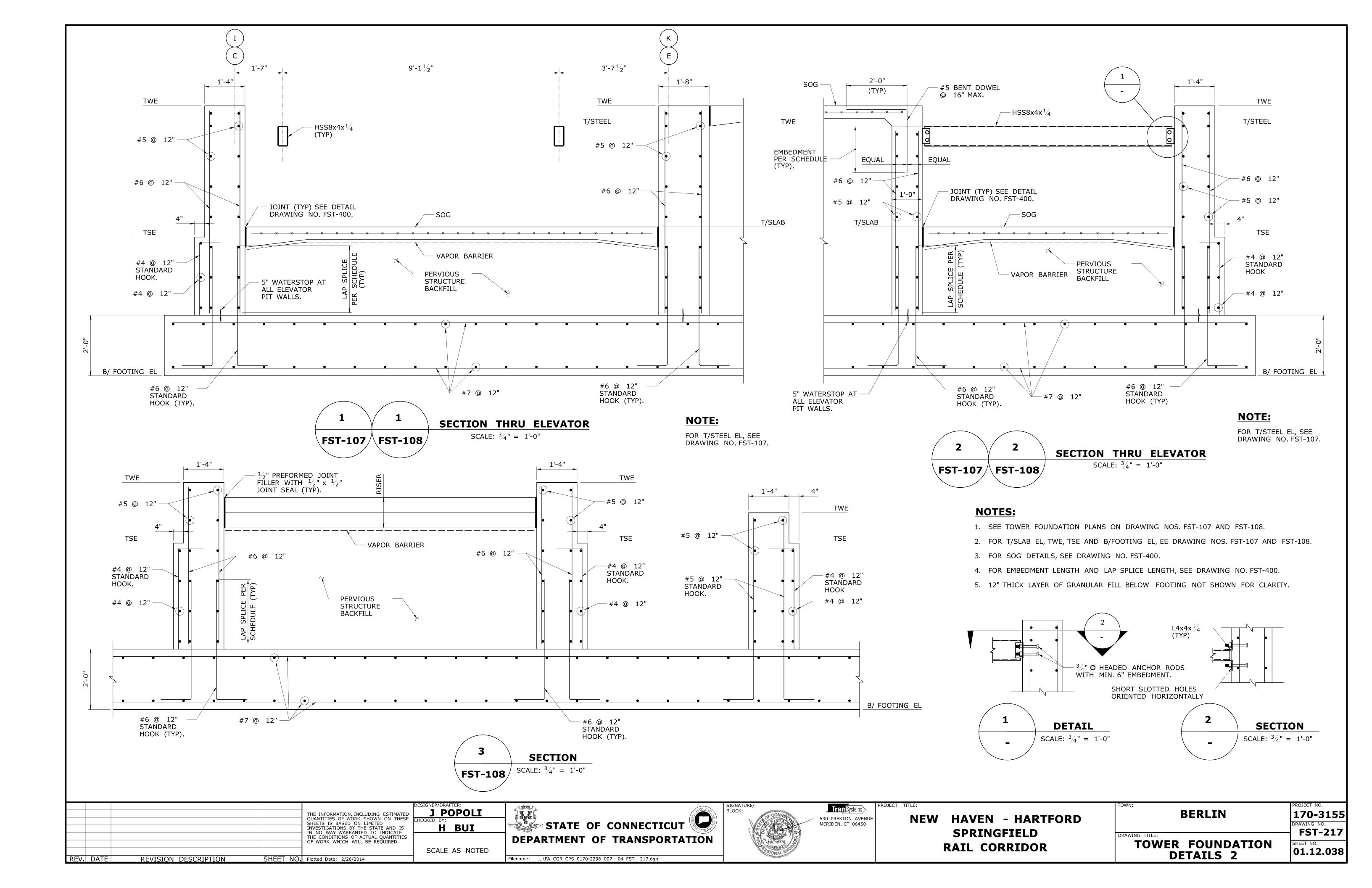


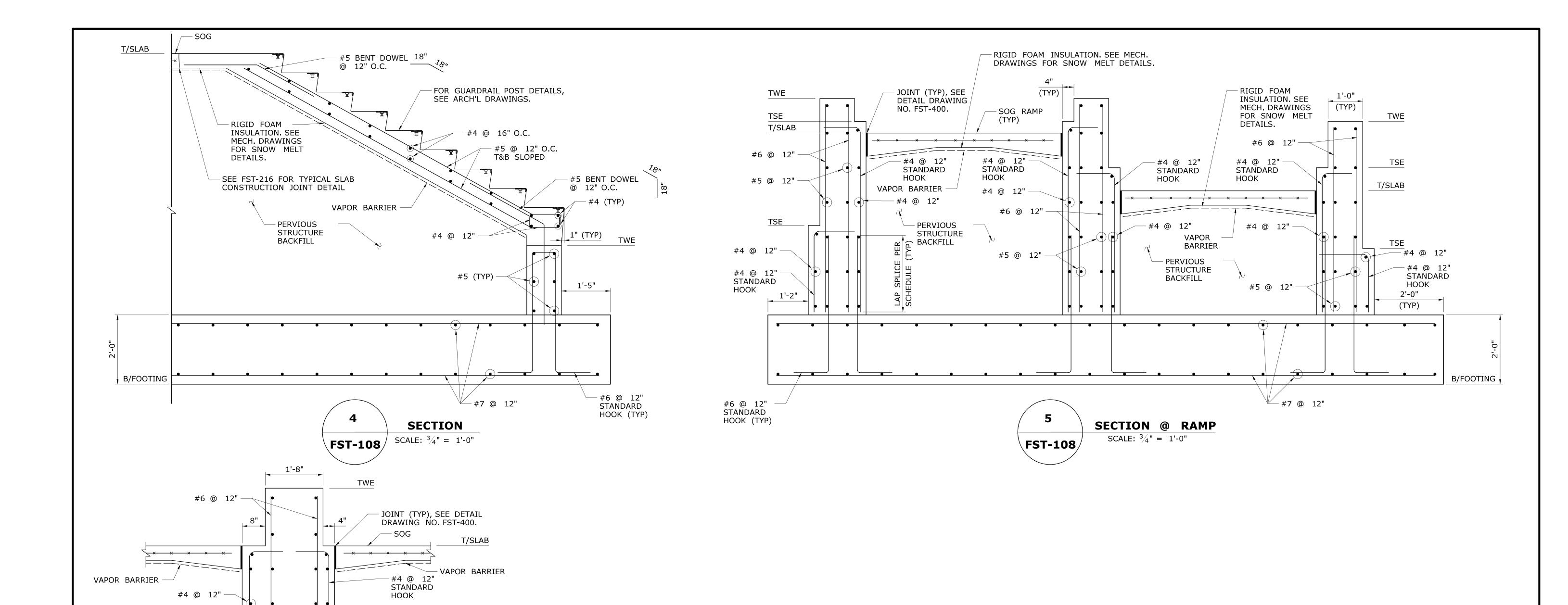












PIER #	INITIAL ELEVATION	FINAL ELEVATION	PIER #	INITIAL ELEVATION	FINAL ELEVATION
1	-0'-8"	+0'-0"	7	+0'-8"	+1'-4"
1A	-0'-8"	+0'-0"	8	+0'-8"	+1'-4"
2	-0'-8"	+0'-0"	9	+0'-8"	+0'-8"
2A	-0'-8"	+0'-0"	10	-0'-8"	+0'-0"
3	-0'-8"	+0'-0"	11	-0'-8"	+0'-0"
3A	-0'-8"	+0'-0"	11A	+0'-8"	+1'-4"
4	+0'-8"	+1'-4"	12	-0'-8"	+0'-0"
5	-0'-8"	+0'-0"	13	-0'-8"	+0'-0"
6	-0'-8"	+0'-0"	14	-0'-8"	+0'-0"

PERVIOUS

BACKFILL

**∜** #7 @ 12"

**SECTION** 

SCALE:  $\frac{3}{4}$ " = 1'-0"

— #4 @ 12"

STRUCTURE

B/FOOTING V

PERVIOUS

BACKFILL

STRUCTURE

#5 @ 12"-

#4 @ 12" -STANDARD HOOK

#6 @ 12"

HOOK (TYP).

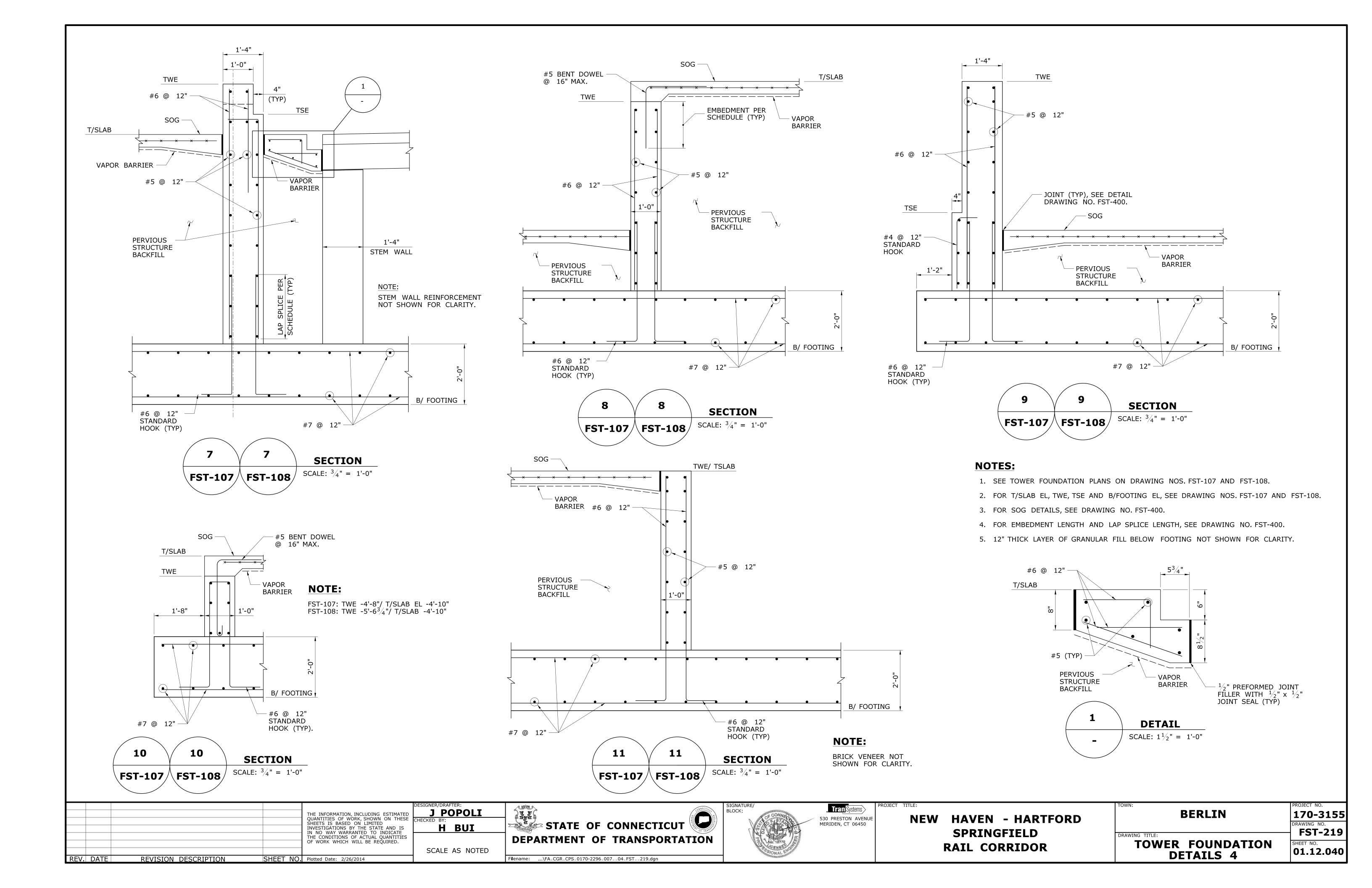
**FST-108**/

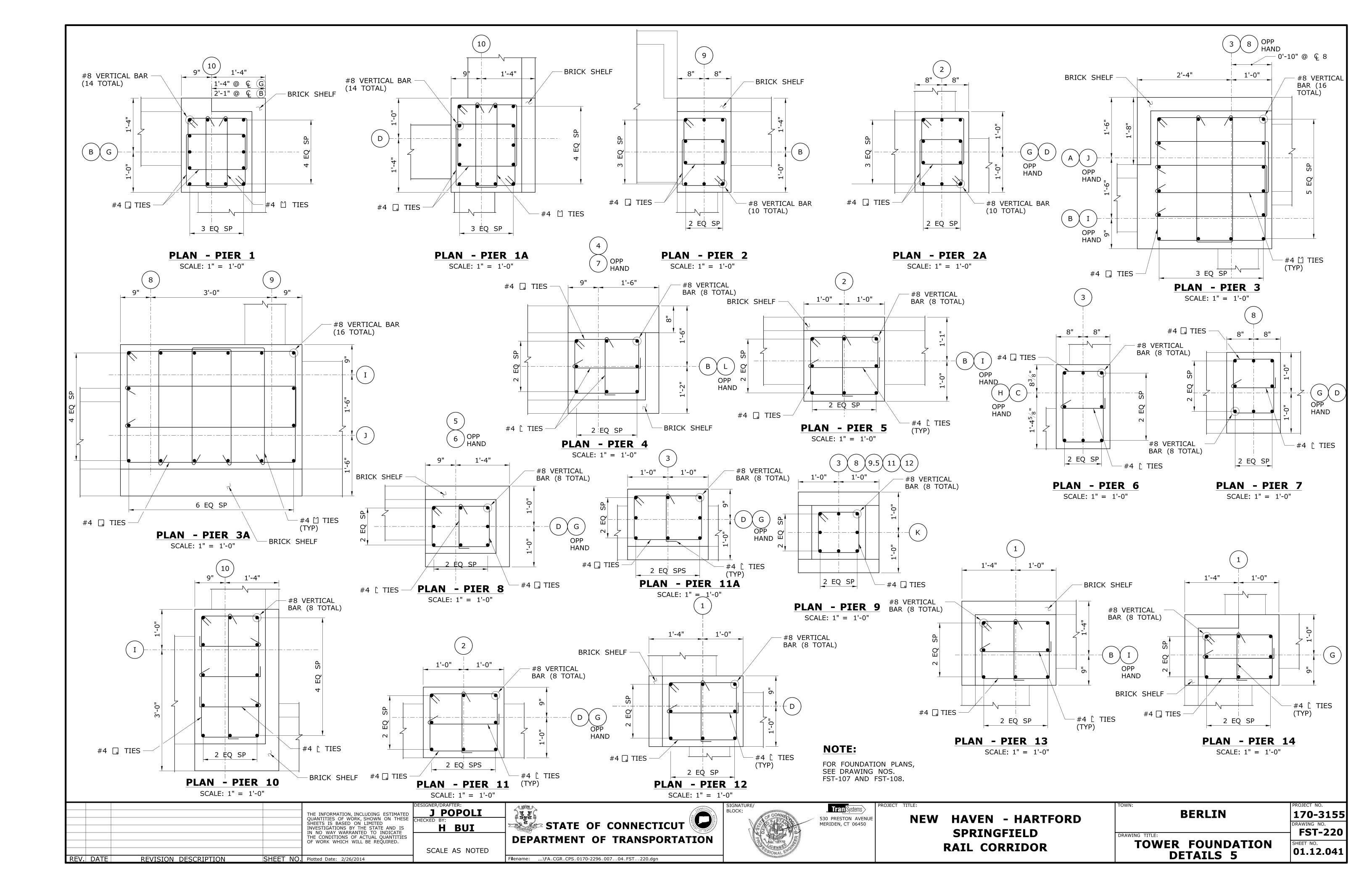
STANDARD

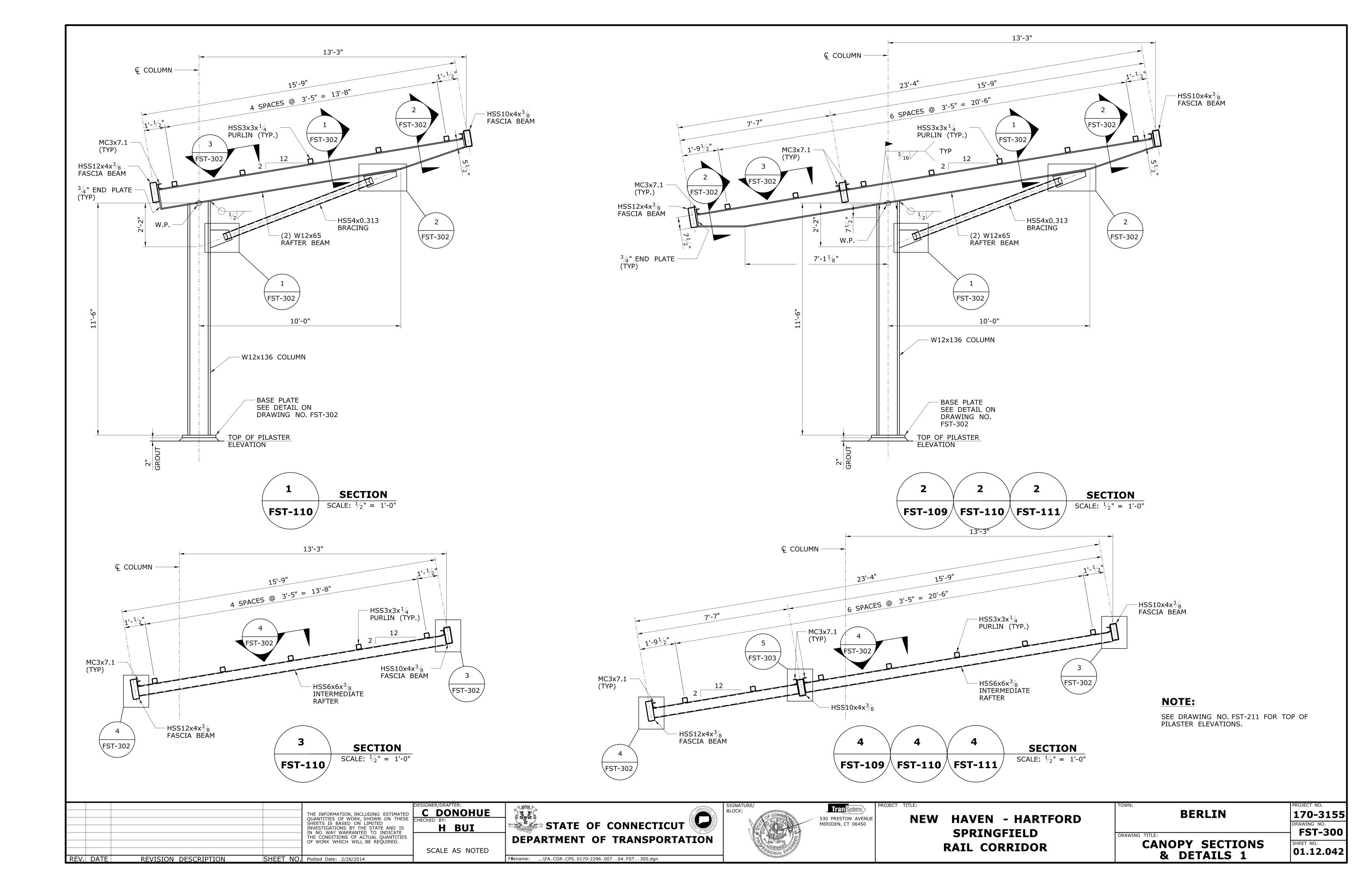
# NOTES:

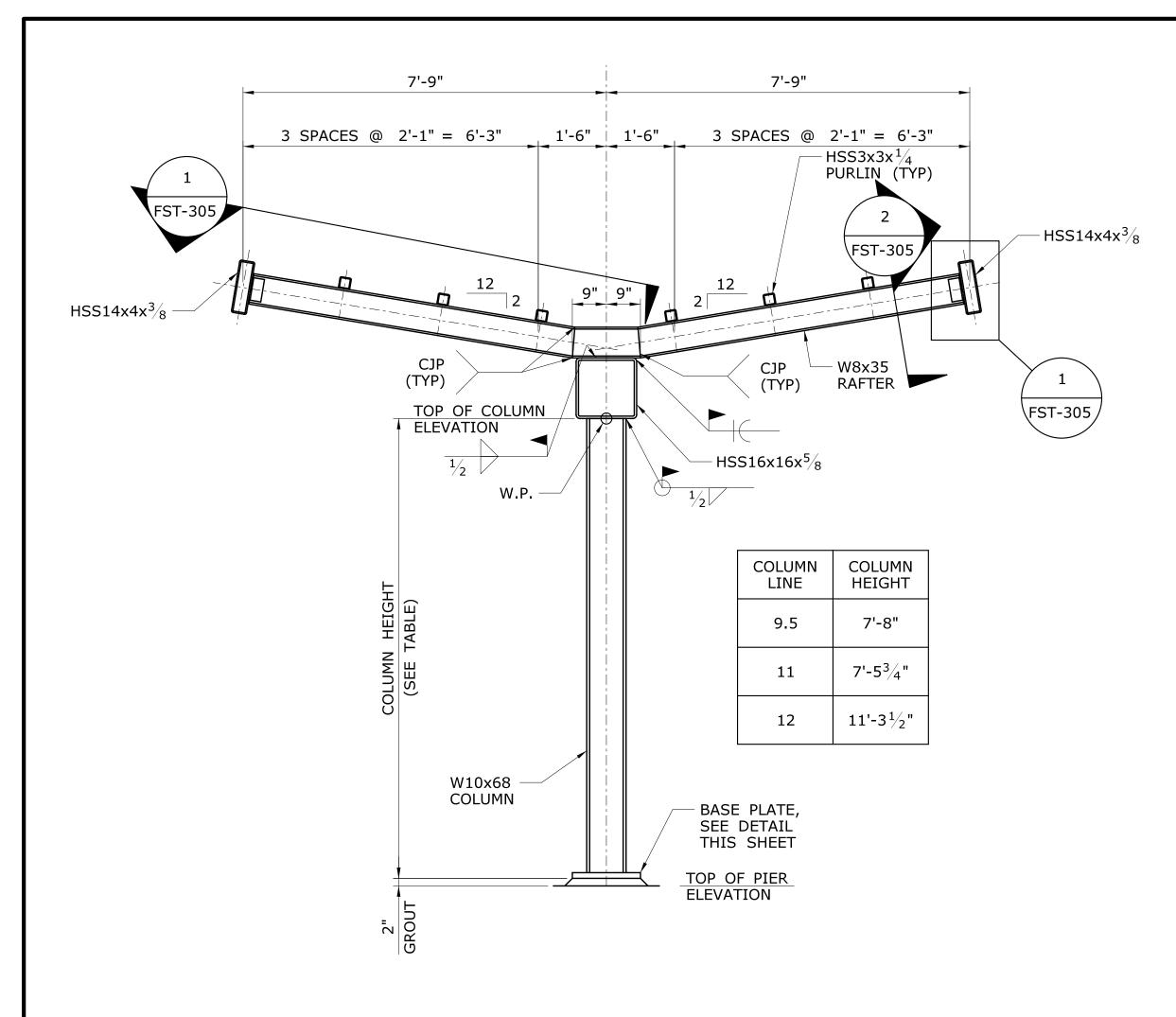
- 1. SEE TOWER FOUNDATION PLANS ON DRAWING NOS. FST-107 AND FST-108.
- 2. FOR T/SLAB EL, TWE, TSE AND B/FOOTING EL, SEE DRAWING NOS. FST-107 AND FST-108.
- 3. FOR SOG DETAILS, SEE DRAWING NO. FST-400.
- 4. FOR EMBEDMENT LENGTH AND LAP SPLICE LENGTH, SEE DRAWING NO. FST-400.
- 5. 12" THICK LAYER OF GRANULAR FILL BELOW FOOTING NOT SHOWN FOR CLARITY.
- 6. THE INITIAL PIER ELEVATIONS GIVEN ON FST-107 & FST-108 ARE TO BE MADE PRIOR TO COLUMN INSTALLATION. FINAL PIER ELVATIONS GIVEN IN THE TABLE ON FST-218 ARE TO BE MADE CONCURRENTLY WITH SLAB ON GRADE CONSTRUCTION.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS	DESIGNER/DRAFTER:  J POPOLI  CHECKED BY:  H BUI	STATE OF CONNECTICUT	SIGNATURE/ BLOCK:  Train Systems  530 PRESTON AVENUE MERIDEN, CT 06450	NEW HAVEN - HARTFORD	BERLIN	PROJECT NO.  170-3155  DRAWING NO.  EST. 218
REV. DATE REVISION DESCRIPTION SHEET NO. Plotted Date: 2/26/2014	SCALE AS NOTED	DEPARTMENT OF TRANSPORTATION  Filename:\FA_CGR_CPS_0170-2296_00704_FST218.dgn	AND. 12776  SIONAL  MARIANTE PROPERTY OF THE P	SPRINGFIELD RAIL CORRIDOR	TOWER FOUNDATION DETAILS 3	FST-218  SHEET NO.  01.12.039

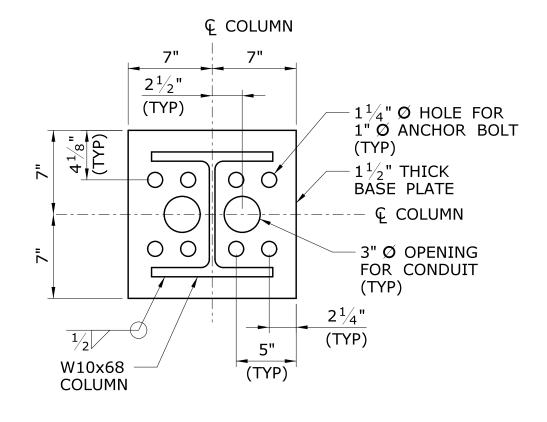






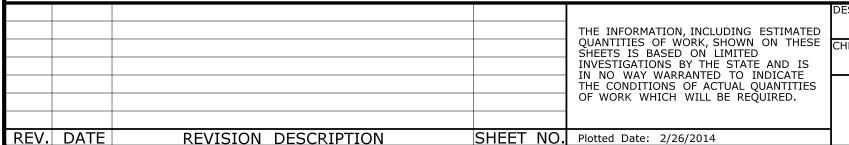


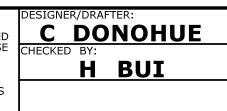




# SCALE: $1\frac{1}{2}$ " = 1'-0"

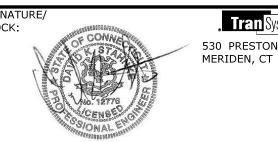
**BASE PLATE DETAIL** 





SCALE AS NOTED





KAIL COKKIDOK

;	PROJECT NO.
BERLIN	170-3155
	DRAWING NO.
ING TITLE:	<b>│ FST-301</b> │
CANOPY SECTIONS & DETAILS 2	SHEET NO. <b>01.12.043</b>

**Tran** Systems 530 PRESTON AVENUE MERIDEN, CT 06450

TTLE:		
NEW	<b>HAVEN</b>	- HARTFORD
	SPRING	GFIELD
	DATI CO	

7'-9"

- HSS16x16x $\frac{5}{8}$ 

**SECTION** SCALE:  $\frac{1}{2}$ " = 1'-0"

 $ackslash\mathsf{FST} ext{-}\mathbf{1}\mathbf{1}\mathbf{1}$ 

- HSS3x3x $^{1}/_{4}$  PURLIN (TYP)

\FST-305

CJP W8x35 (TYP) RAFTER

 $-HSS14x4x^3/_8$ 

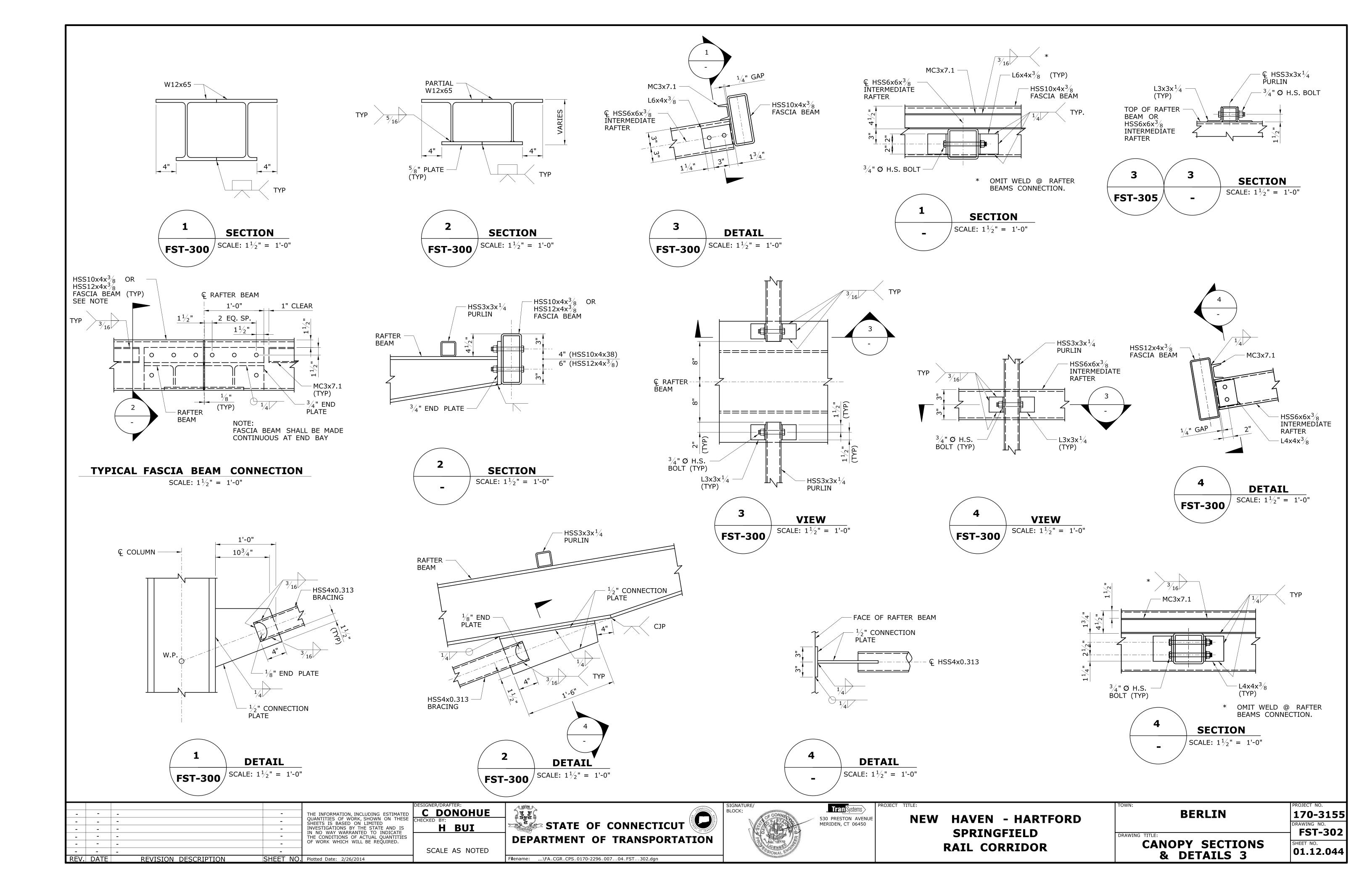
\FST-305

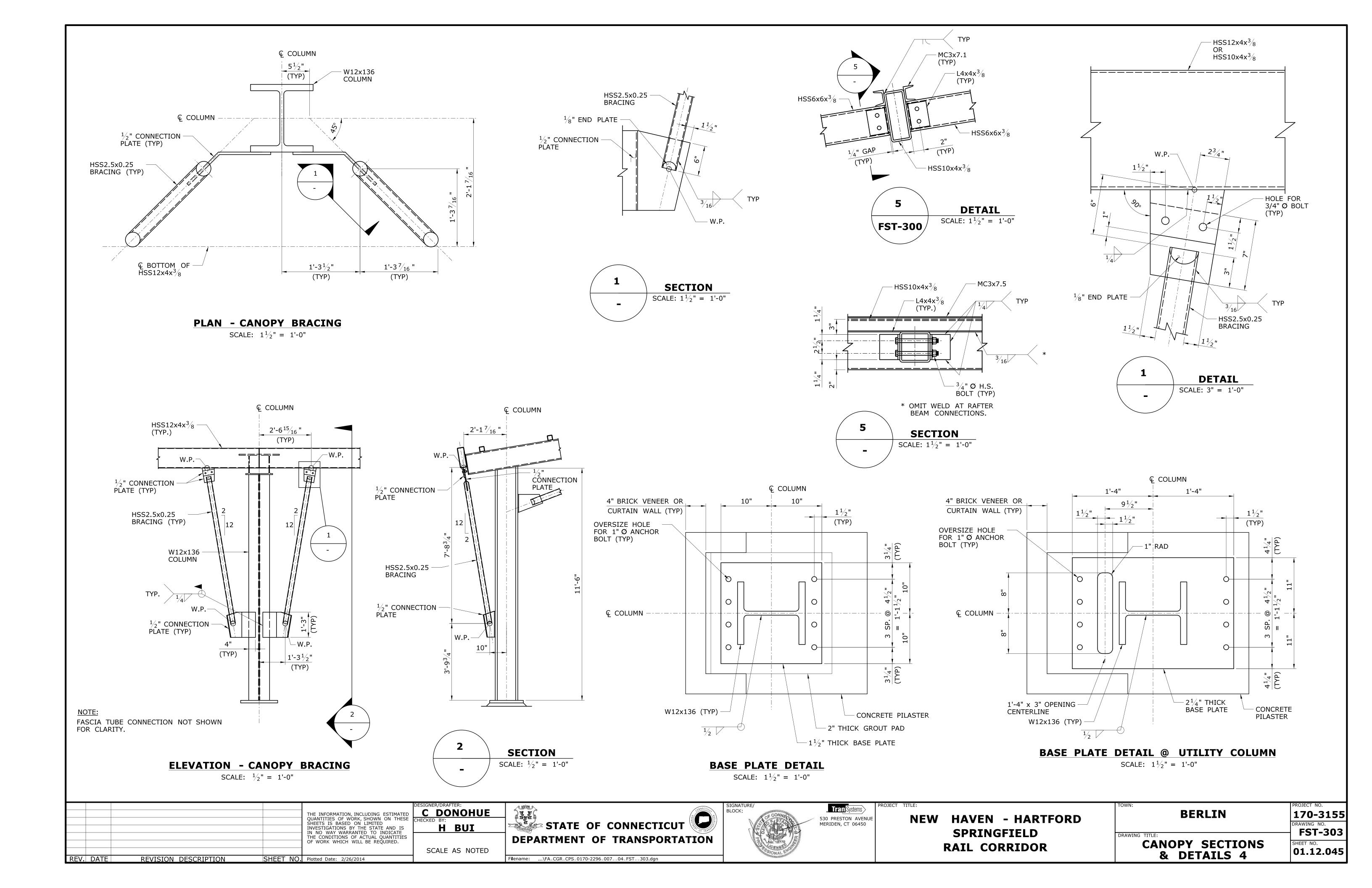
1'-6" 1'-6" 3 SPACES @ 2'-1" = 6'-3"

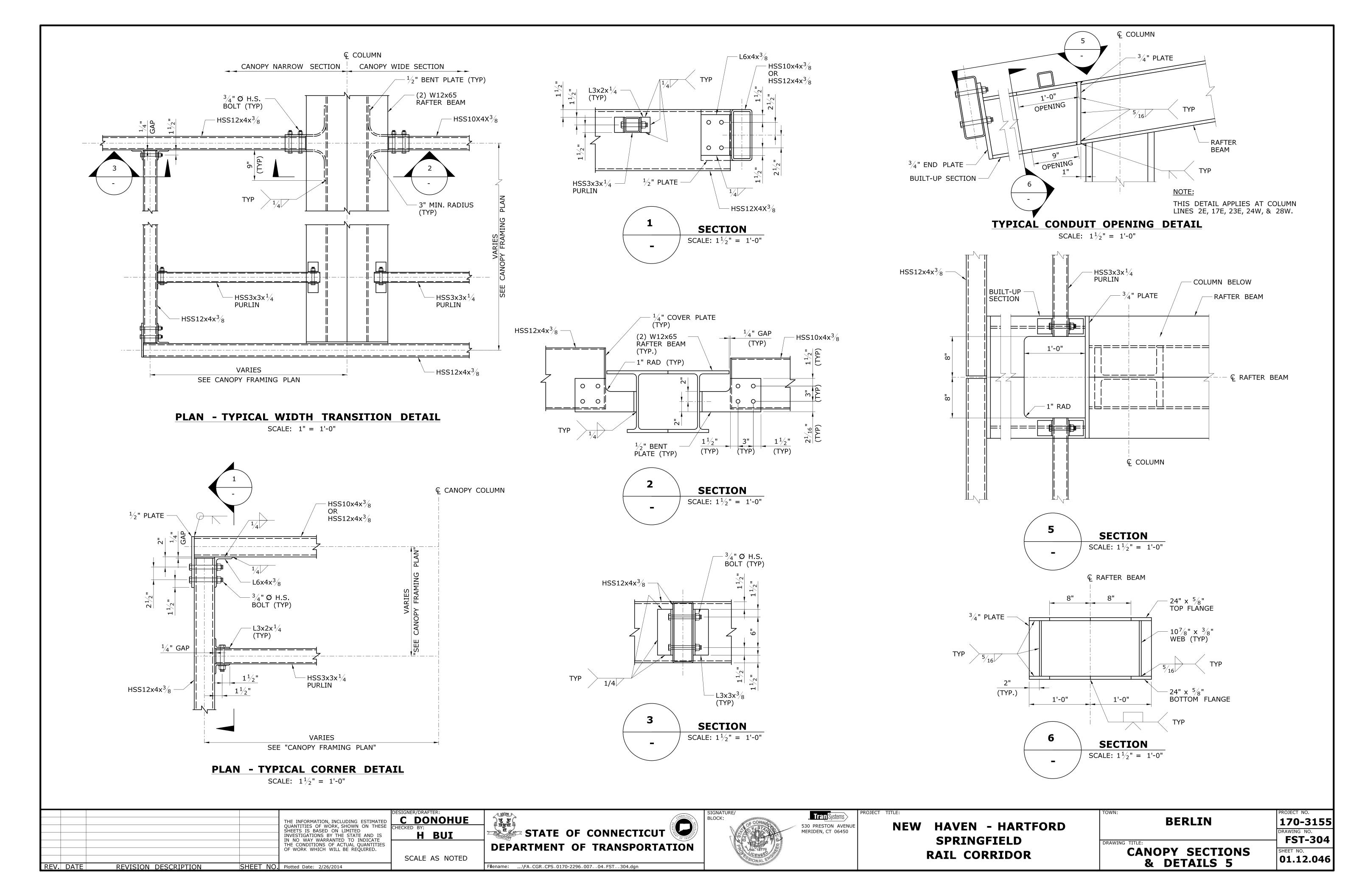
7'-9"

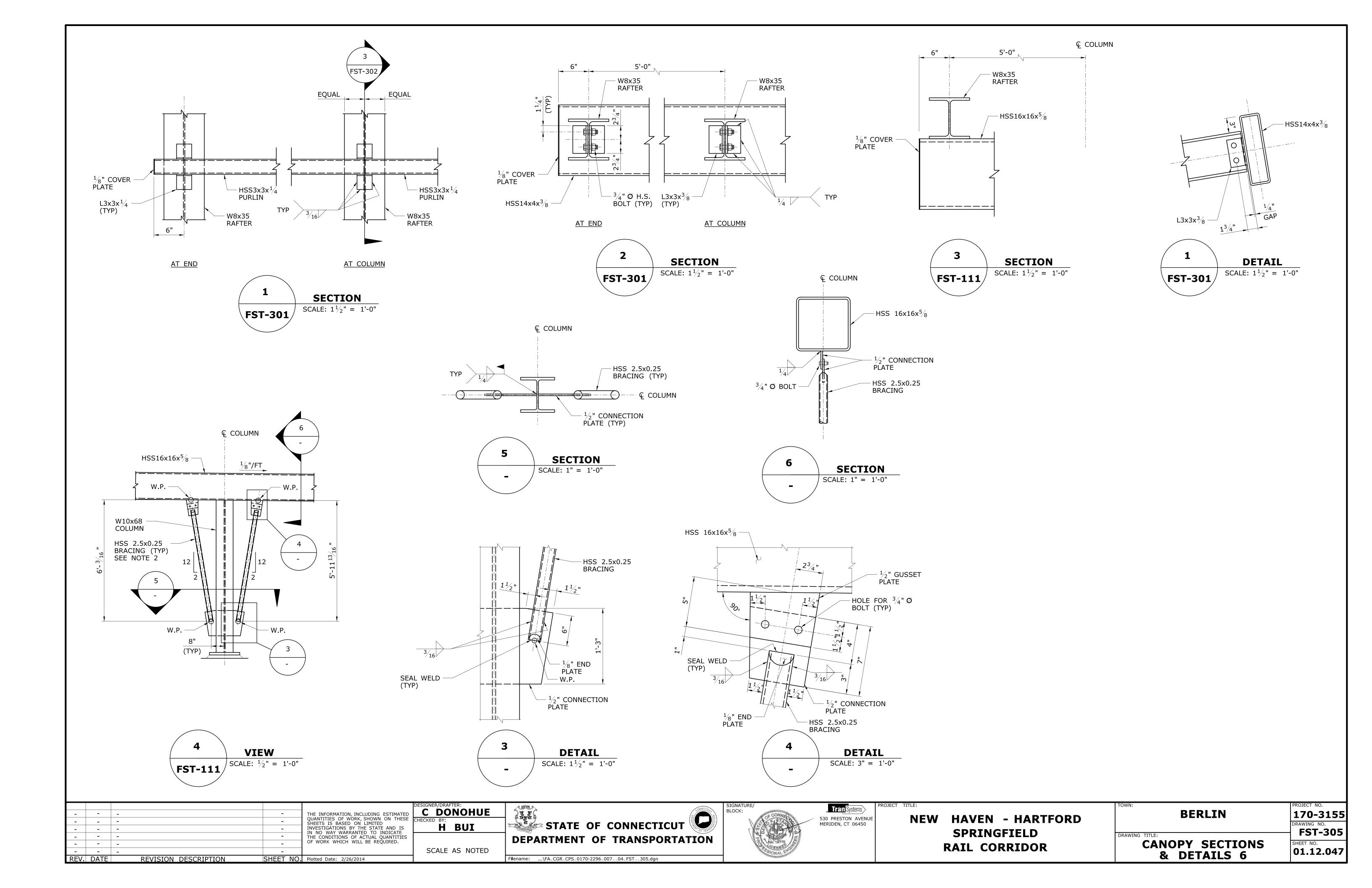
3 SPACES @ 2'-1" = 6'-3"

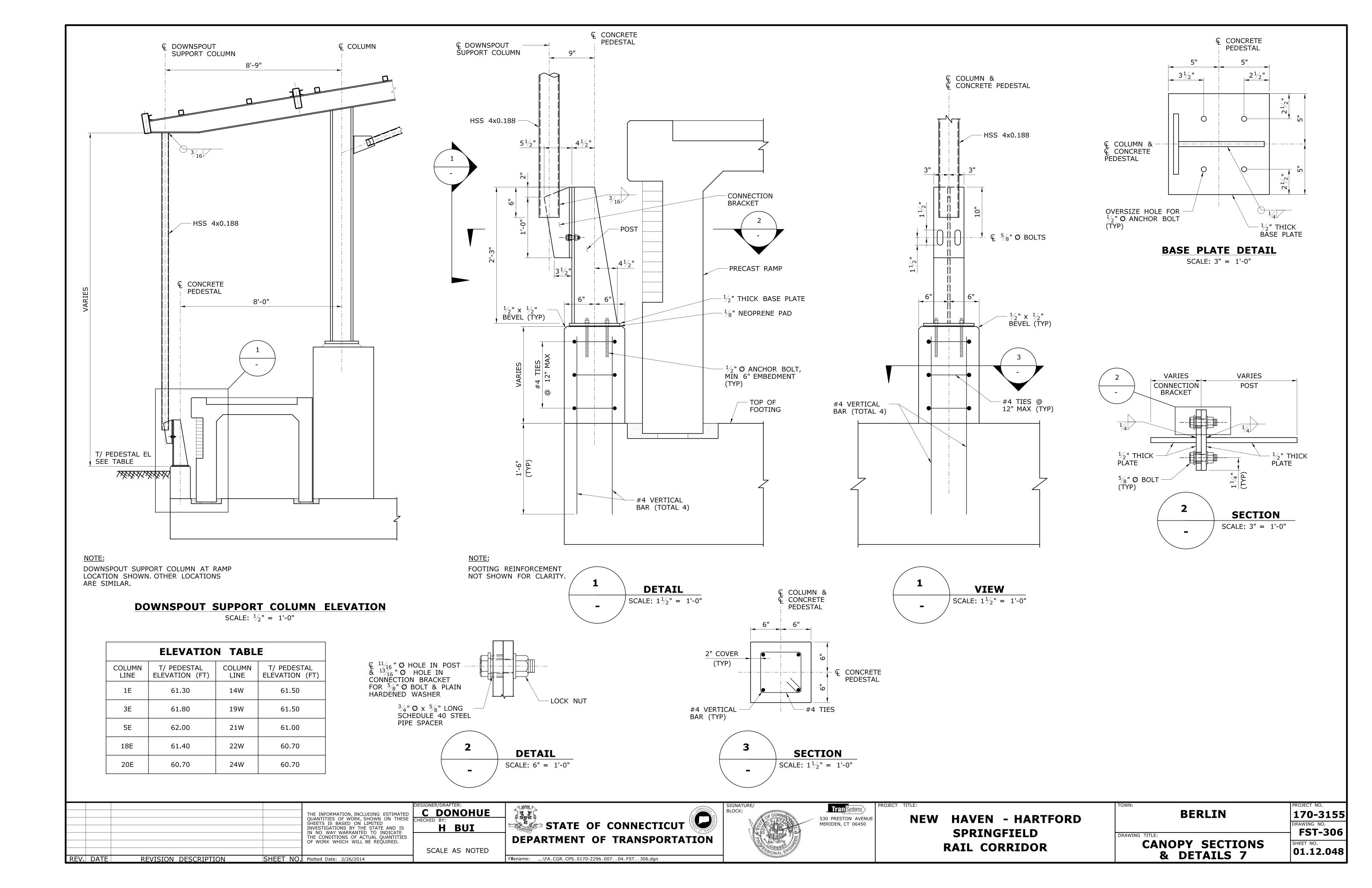
 $HSS14x4x^3/_8$ 

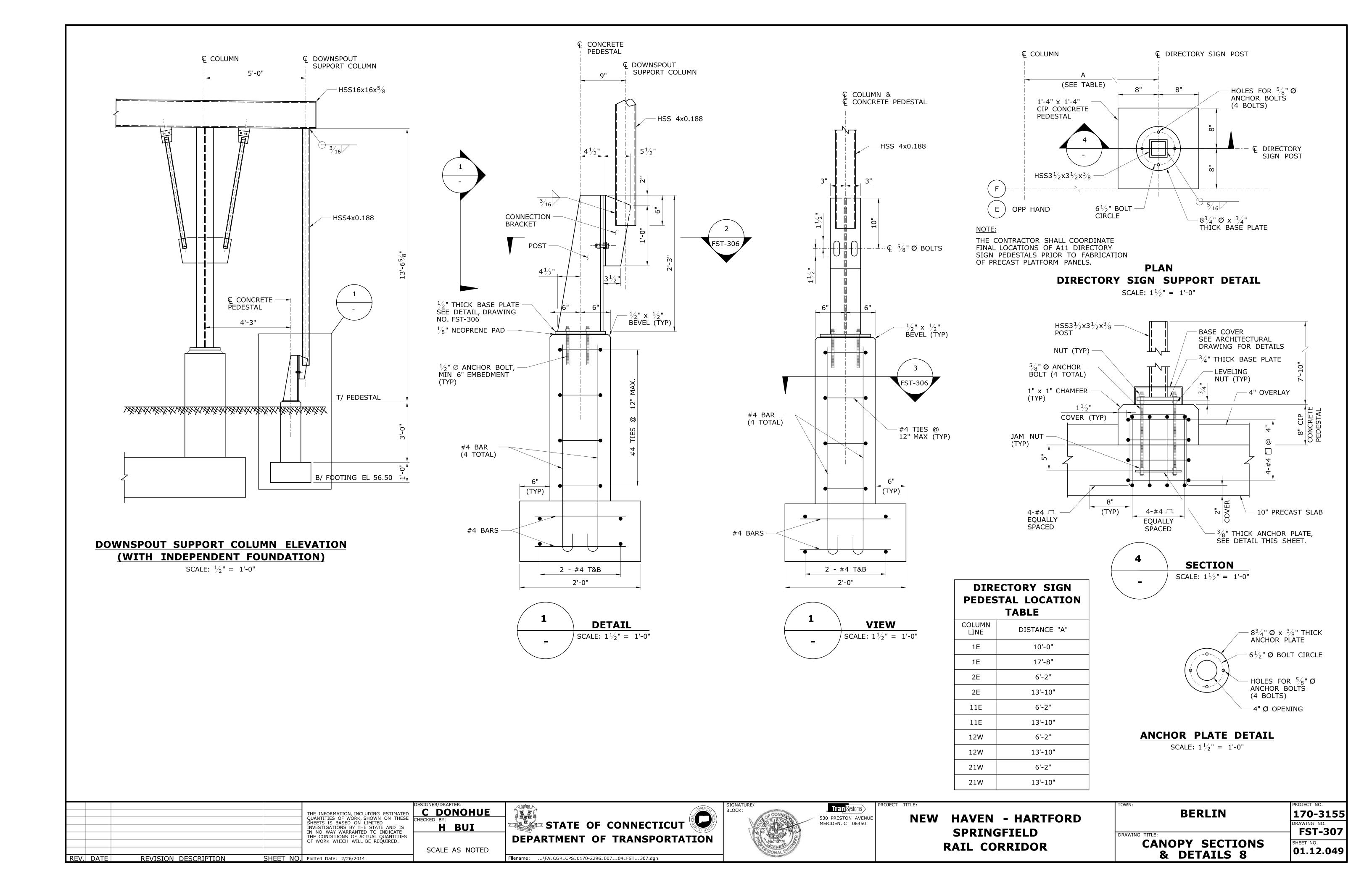


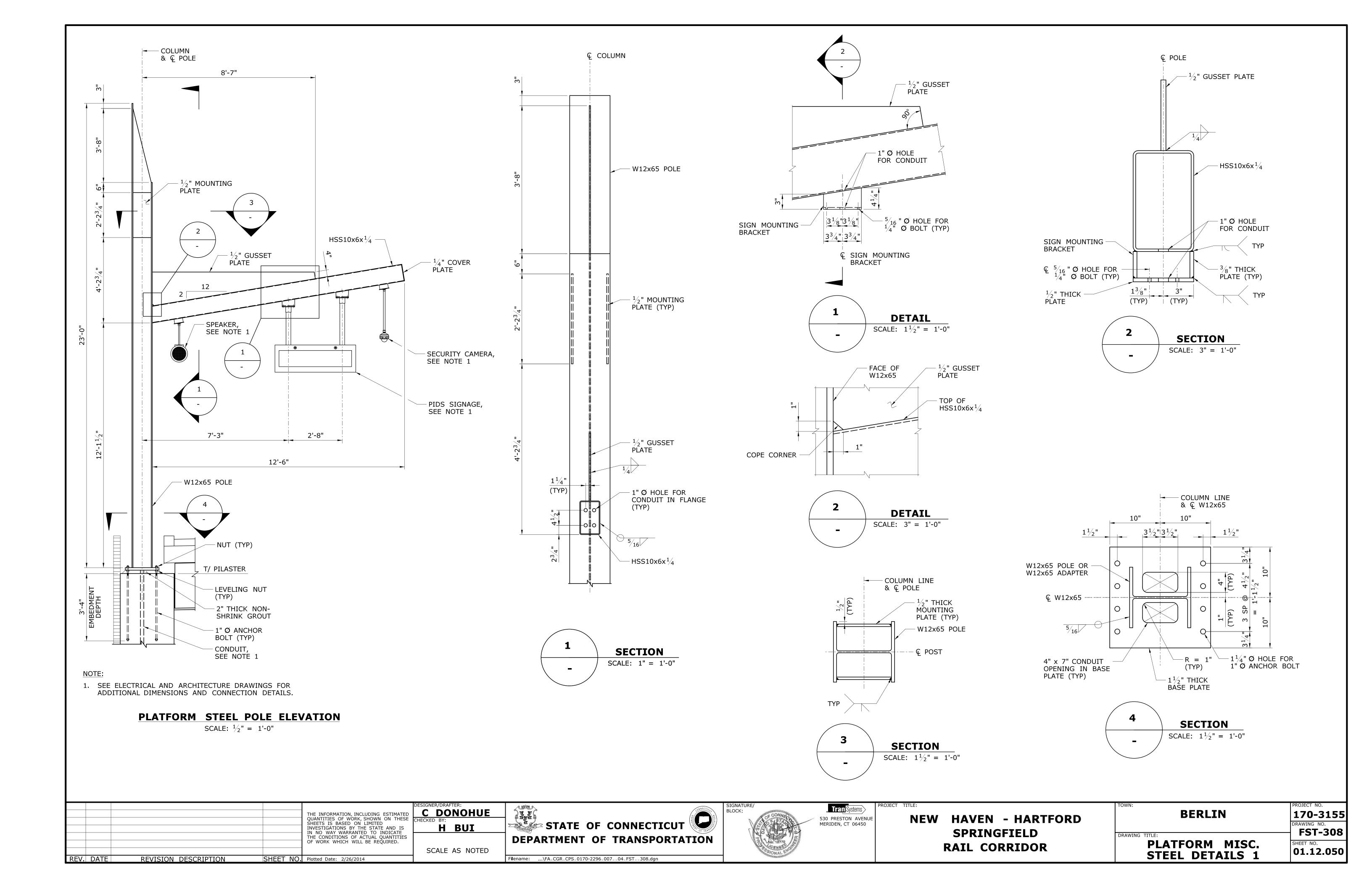


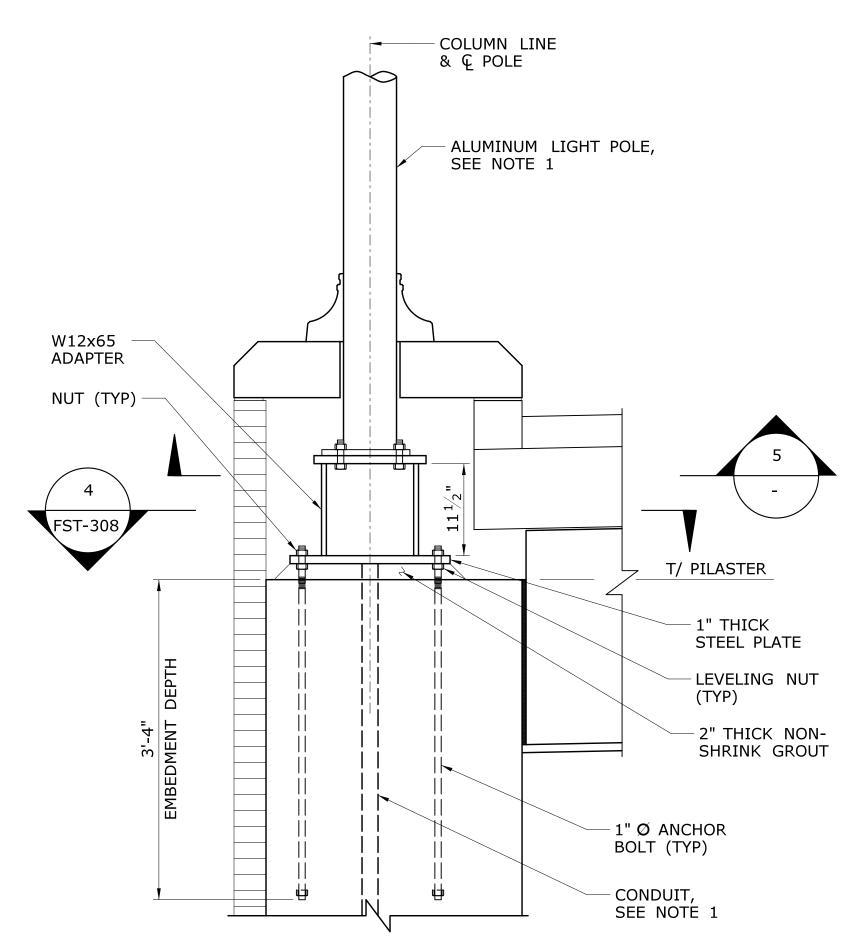












HSS6x6x3/8
INTERMEDIATE
RAFTER

SECURITY CAMERA,
SEE NOTE 1

PIDS SIGNAGE,
SEE NOTE 1

Q CANOPY COLUMN

1. SEE ELECTRICAL AND ARCHITECTURE DRAWINGS FOR ADDITIONAL DIMENSIONS AND DETAILS.

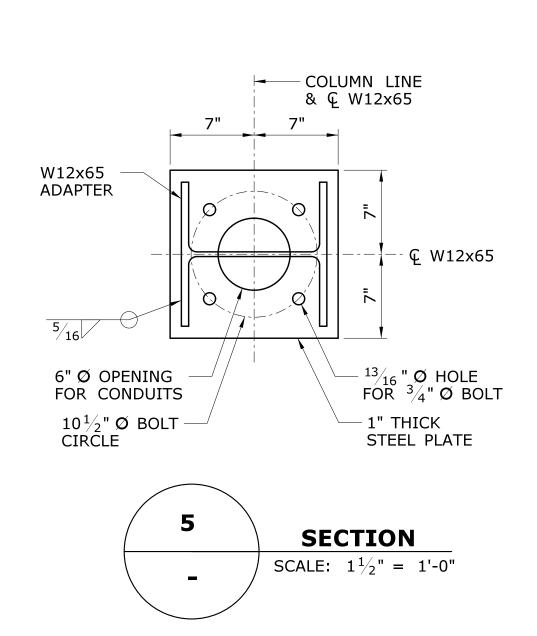
# TYPICAL ELECTRICAL DETAIL AT INTERMEDIATE RAFTER SCALE: \(\frac{1}{2}\)" = 1'-0"

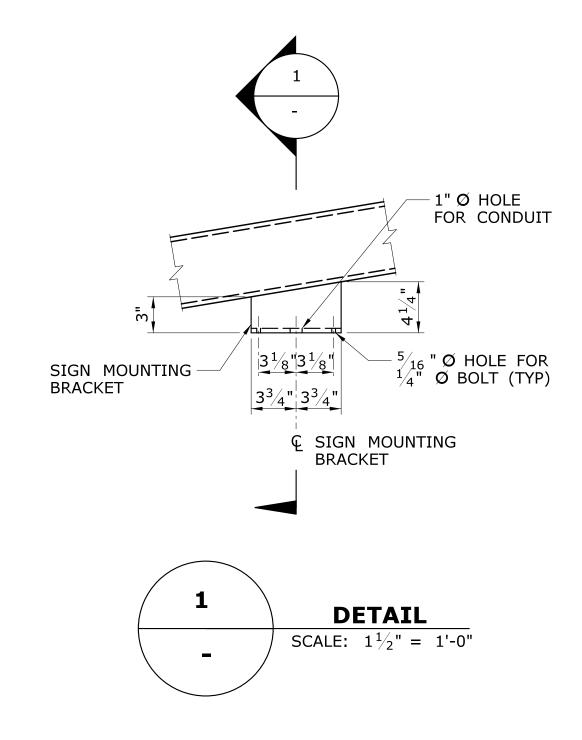
### NOTE:

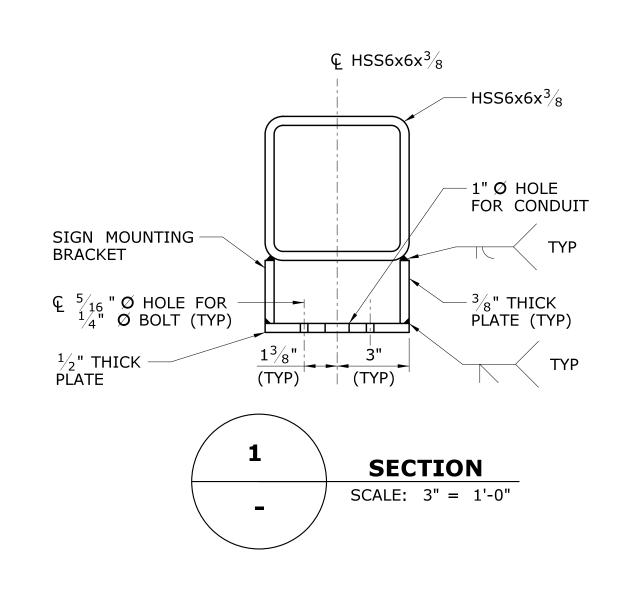
1. SEE ELECTRICAL AND ARCHITECTURE DRAWINGS FOR ADDITIONAL DIMENSIONS AND CONNECTION DETAILS.

# **ALUMINUM LIGHT POLE ADAPTER ELEVATION**

SCALE: 1" = 1'-0"







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REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 2/26/2014

	DESIGNER	R/DRAF	TER:
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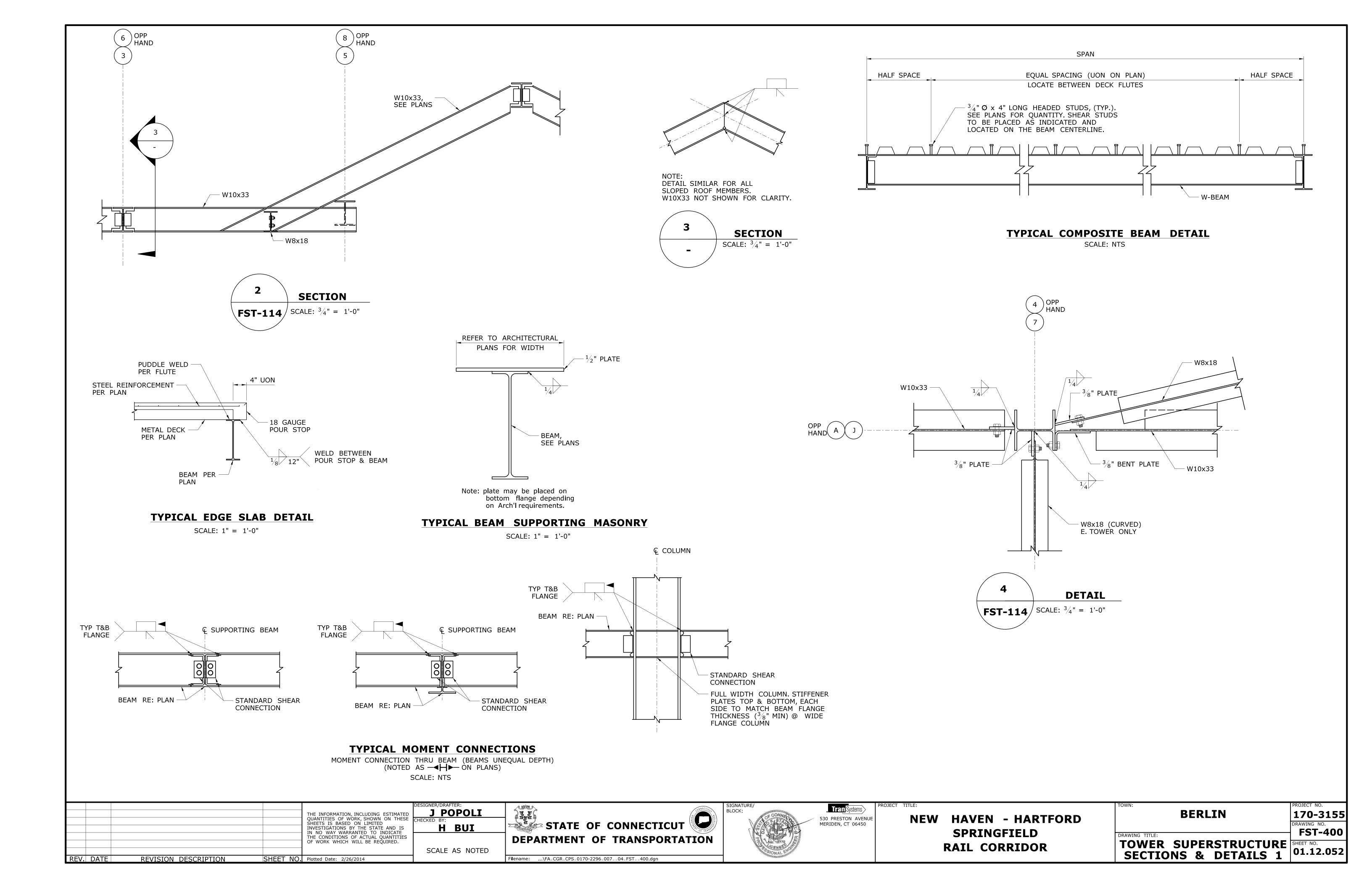


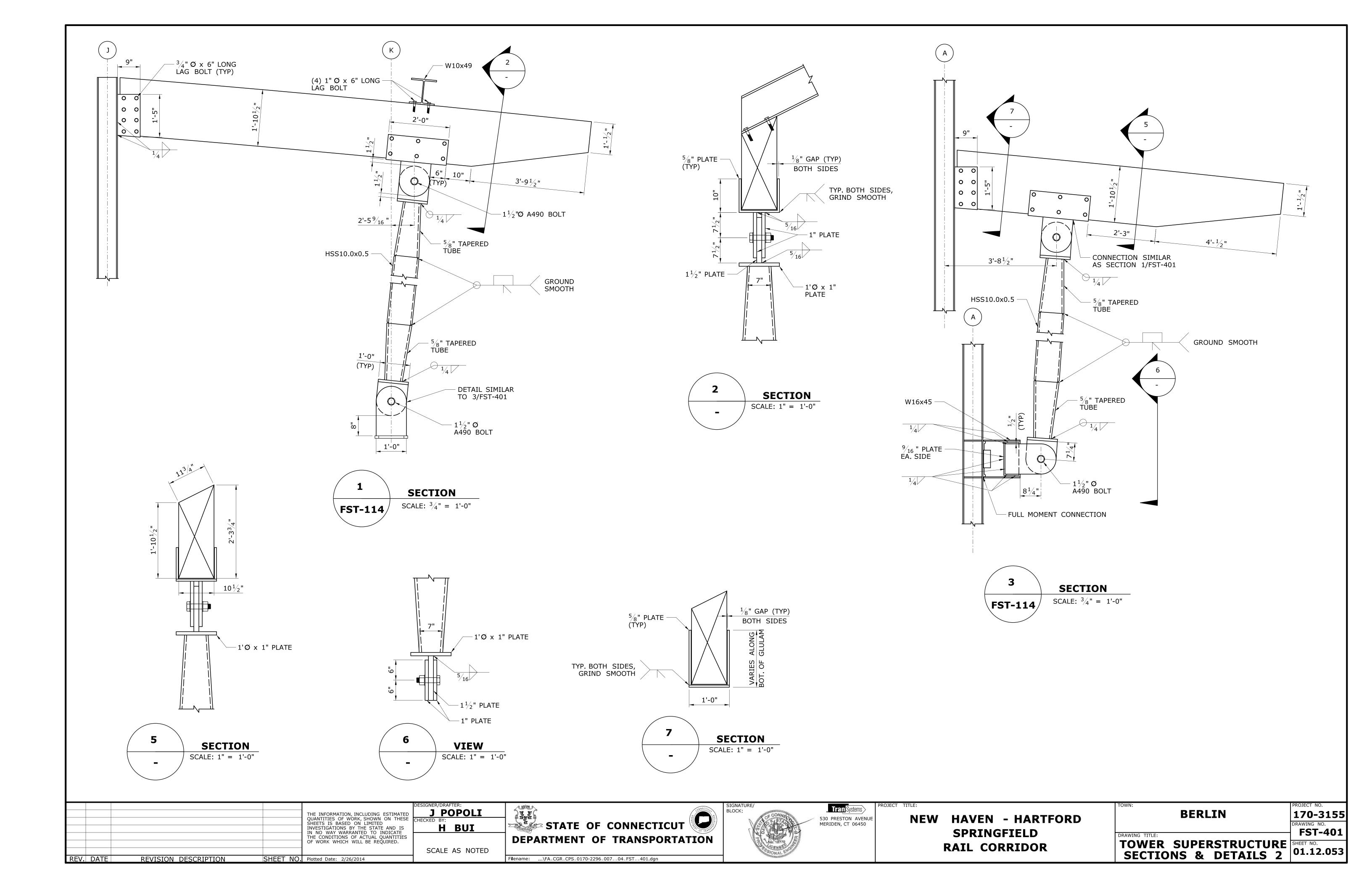
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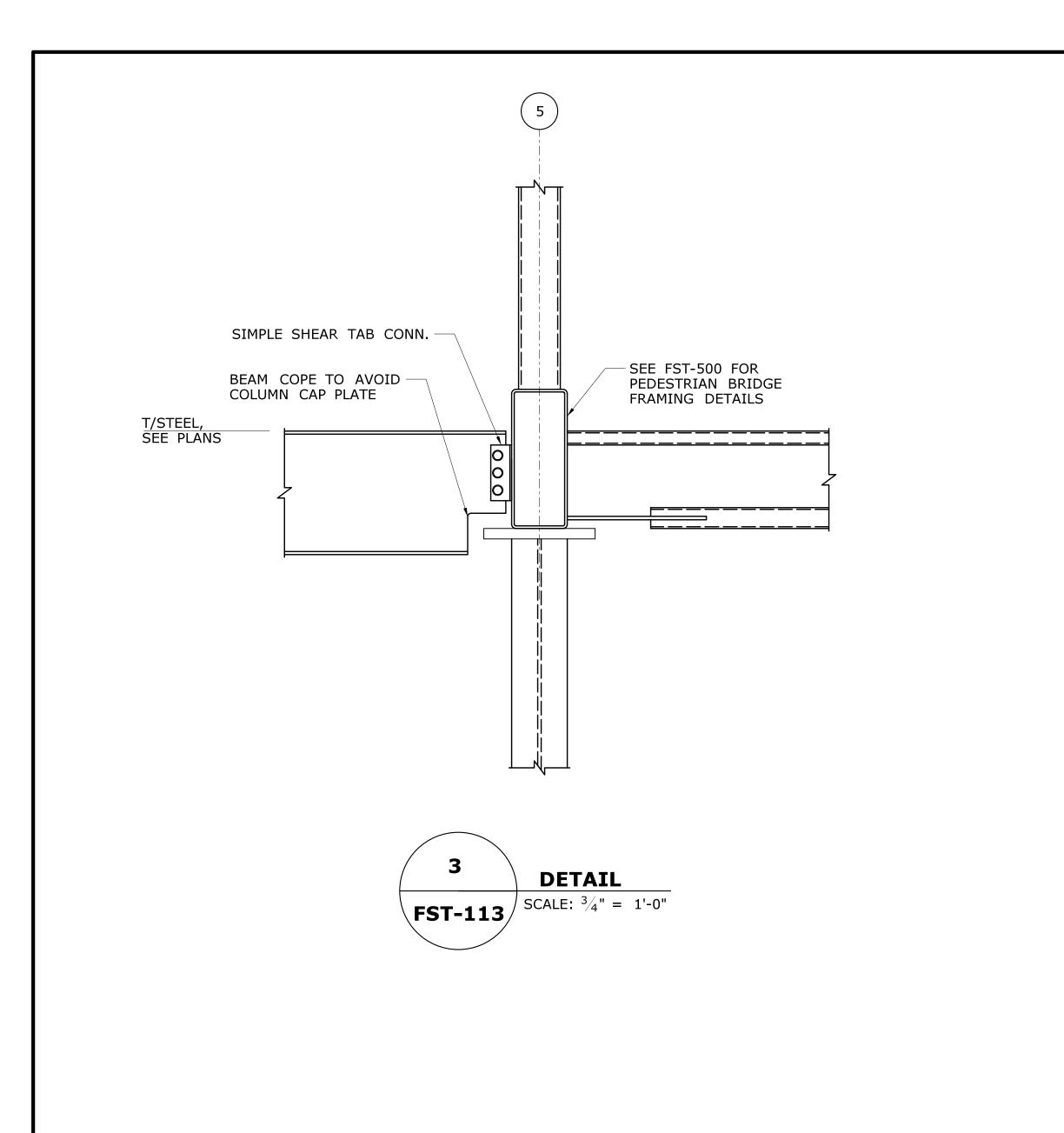
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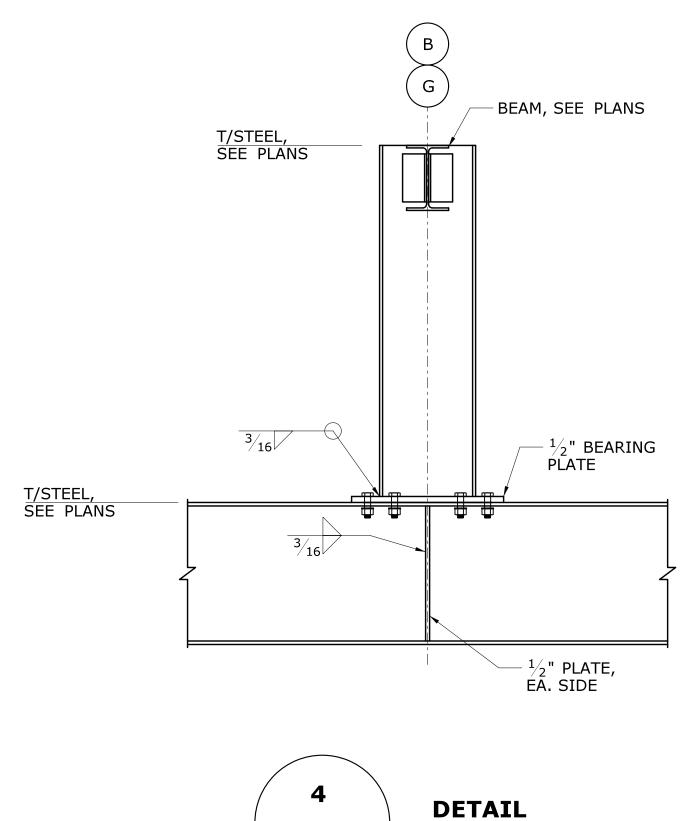
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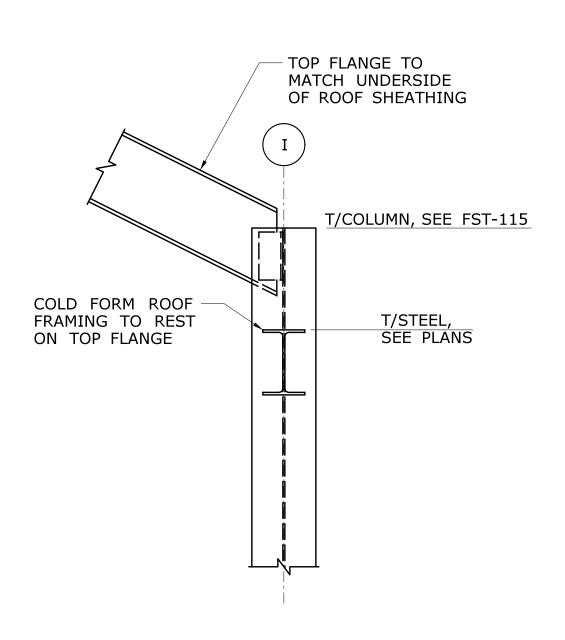






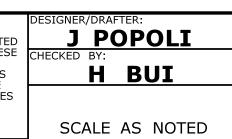
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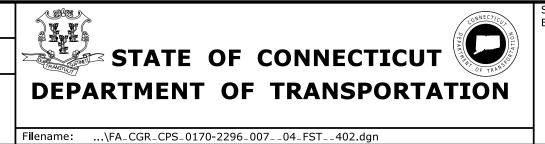
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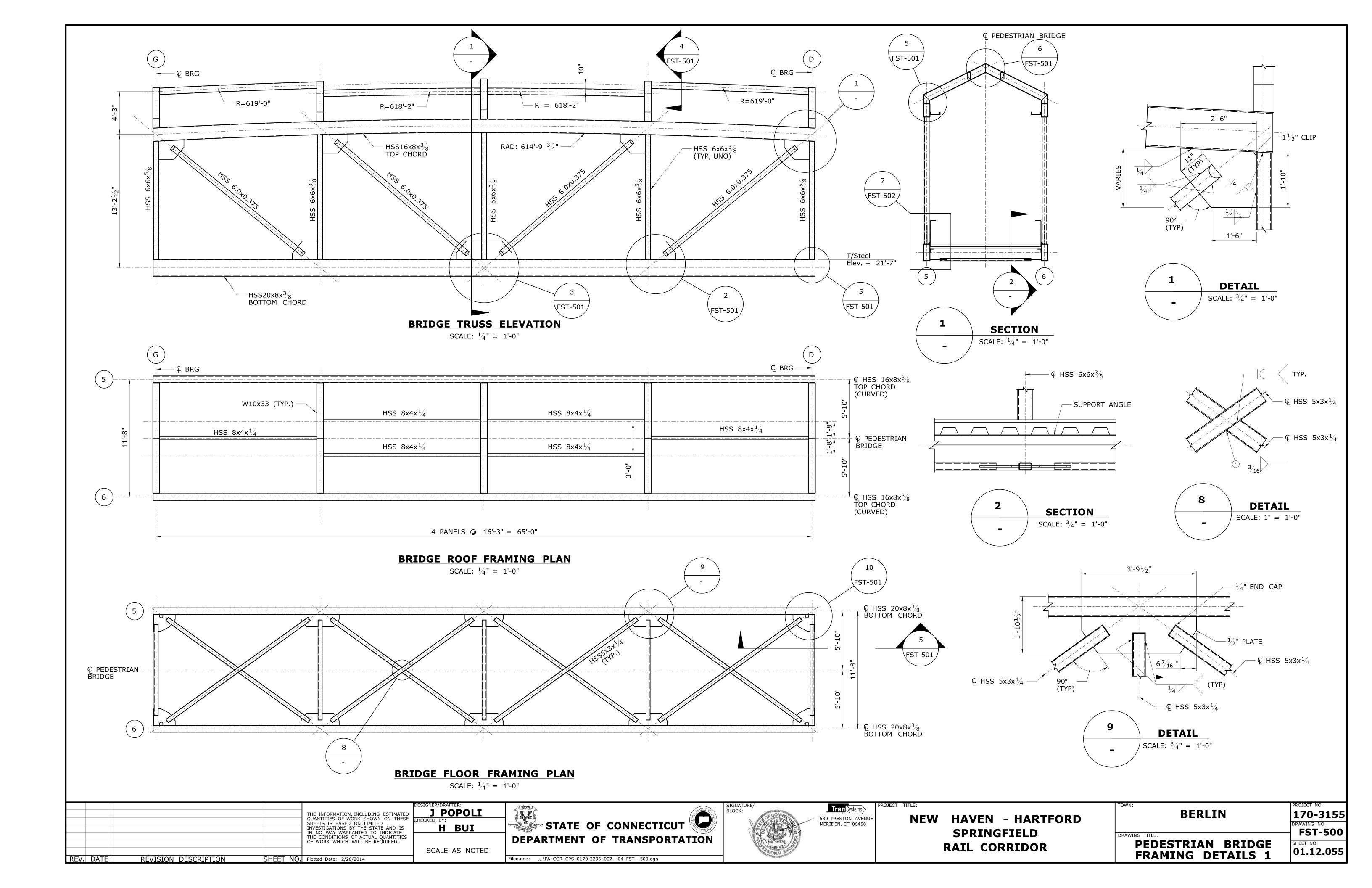


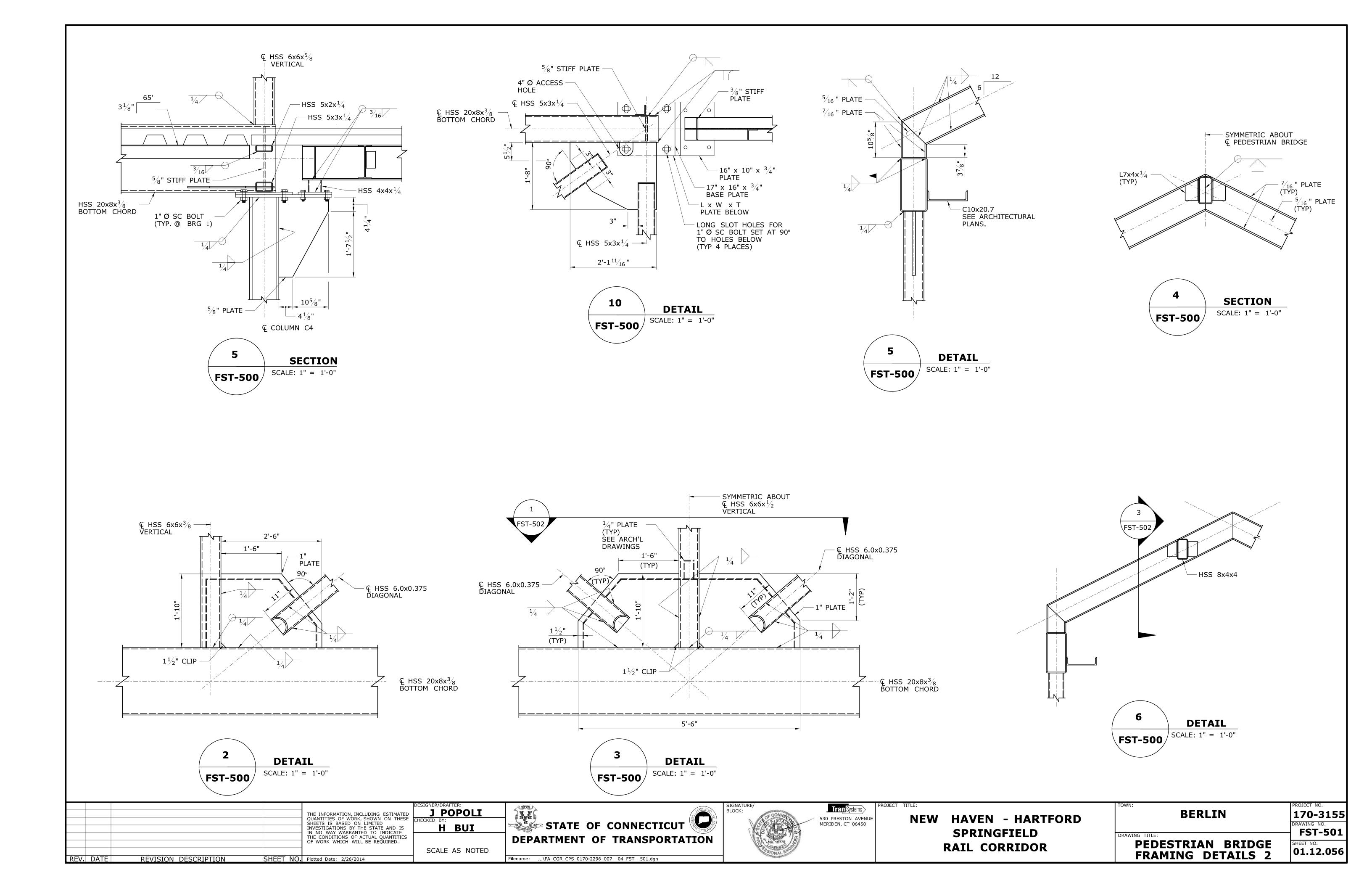


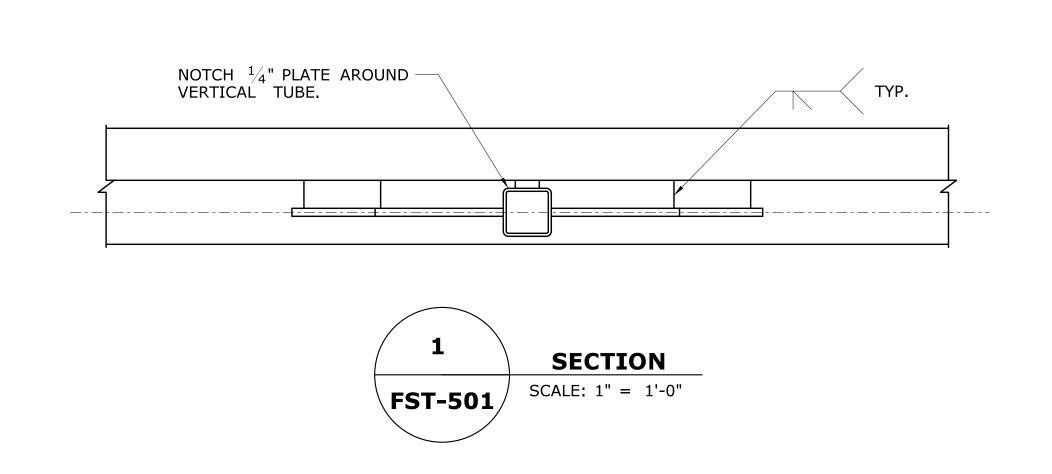


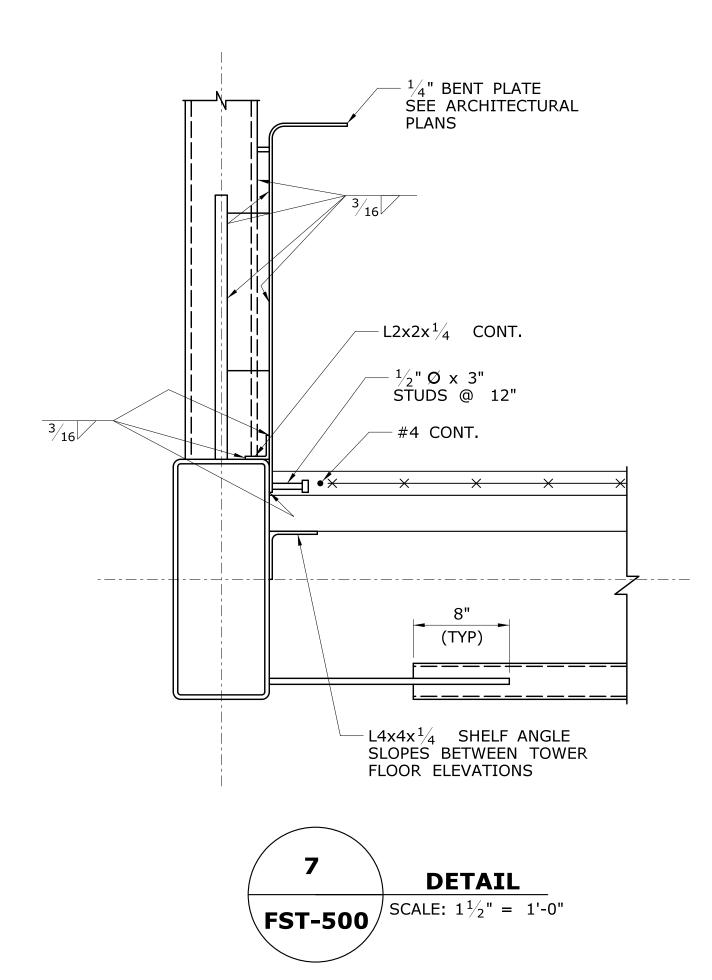
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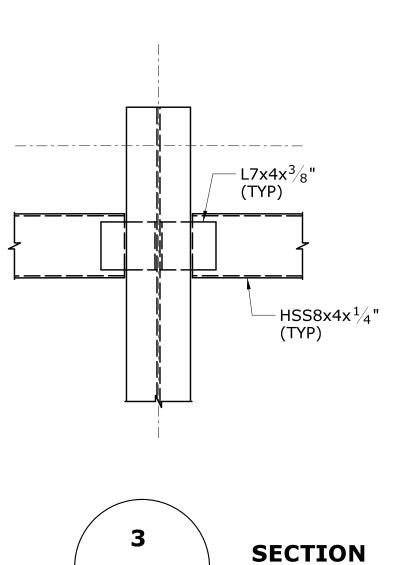
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# **NOTES:**

- FOR GENERAL NOTES AND STRUCTURAL NOTES, SEE DRAWING NOS. FST-001 TO FST-003.
- COORDINATE ALL DIMENSIONS AND DETAILS WITH THE ARCHITECTURAL DRAWINGS.
- 3. FOR PLATFORM PLANS, SEE DRAWING NOS FST-103 TO FST-105.
- 4. FOR TOWER ROOF FRAMING PLANS, SEE DRAWING NOS. FST-112 TO FST-113.
- FLOOR DECK IS TO BE INSTALLED OFF SITE AND TO RECEIVE METALIZED FINISH ALONE WITH THE BRIDGE STRUCTURE PRIOR TO DELIVERY. COORDINATE WITH ARCHITECTURAL PLANS AND SPECS FOR FINISHES.

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#### **ERECTION SEQUENCE - OVERALL GENERAL NOTES:**

- 1. THE SUGGESTED STEPS ILLUSTRATE A SEQUENCE OF STEEL ERECTION ATTEMPTING TO CONFORM TO RAILROAD REGULATIONS, TO MINIMIZE DISRUPTIONS TO THE RAIL SERVICE AND SITE CONSTRAINTS. THE SEQUENCE MAY BE ALTERED SO LONG AS THE OPERATION OF THE RAILROAD IS MAINTAINED IN CONFORMANCE WITH THE SPECIFICATIONS, AND SUBJECT TO APPROVAL BY THE DESIGN PROFESSIONALS, THE CONNECTICUT DEPARTMENT OF TRANSPORTATION (CONNDOT) AND AMTRAK.
- EQUIPMENT SHOWN IS PRESENTED TO DEMONSTRATE REQUIRED CLEARANCES AND POSSIBLE LOCATIONS OF EQUIPMENT WITH RELATIONSHIP TO CONSTRUCTION ACTIVITIES. IN NO WAY SHOULD IT BE CONSTRUED TO BEING A FINAL AND ONLY WAY FOR CONSTRUCTION. DIFFERENT AND/OR SMALLER PIECES OF EQUIPMENT CAN BE UTILIZED AT THE CONTRACTOR'S DETERMINATION AS LONG AS AMTRAK AND CONNDOT REQUIREMENTS, ALONG WITH ALL APPLICABLE CODES AND REGULATIONS, ARE SATISFIED.
- 3. THE WORK AND STAGING INFORMATION LISTED IS NOT INTENDED TO COVER ALL DETAILS OF THE CONSTRUCTION. THE CONTRACTOR MUST PREPARE A DETAILED CONSTRUCTION SEQUENCE PLAN(S) AND SCHEDULE(S) FOR REVIEW AND WITH WRITTEN APPROVAL PRIOR TO BEGINNING ANY WORK.
- GIVEN THE NATURE OF THIS CONSTRUCTION WITH WORK PARALLELING THE RAIL LINES, THE CONTRACTOR IS TO HAVE ON SITE AT ALL TIMES EQUIPMENT CAPABLE OF REMOVING FAILED MACHINES OR DEBRIS FROM THE RAILS IF A BREAKDOWN WERE TO OCCUR.
- CONTRACTOR IS TO HAVE ALL EROSION AND SEDIMENTATION CONTROLS AND PROTECTIONS IN PLACE PRIOR TO BEGINNING ANY WORK.
- FOR EXPECTED TRACK RESTRICTIONS, SEE "NOTICE TO CONTRACTOR WORK ON RAILROAD PROPERTY "INCLUDED IN THE PROJECT SPECIFICATIONS.
- ALL WORK THAT FALLS WITHIN 15 FEET OF THE RAIL CENTERLINE WILL REQUIRE A TRACK CLOSURE.
- REFER TO AMTRAK SPECIFICATION 01142A FOR CRANE/HOISTING OPERATIONS OVER THE RAILROAD RIGHT-OF-WAY.
- CRANE SHOWN IS FOR PLANNING PURPOSES ONLY, CONTRACTOR SHALL SUBMIT CRANE PLACEMENT AND ERECTION PLANS TO THE ENGINEER AND AMTRAK RAILROAD FOR REVIEW. THE PLANS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER LICENSED IN CONNECTICUT AND SHALL DEPICT THE ENTIRE LIFTING AND SETTING PROCEDURE INCLUDING:
  - A. CRANE LOCATION(S)
  - B. RIGGING
  - C. SEQUENCE

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- D. CRANE CHARTS E. STAGING LOCATION OF BRIDGE AT PICK POINT
- F. TAGLINE HANDLING
- 10. A MULTIPLE-TRACK NIGHT TIME CLOSURE IS REQUIRED DURING LIFTING AND PLACING OPERATIONS. CONTRACTOR TO COORDINATE WITH AMTRAK THE AVAILABLE DAY AND TIME.
- 11. PRIOR TO THE PREPARATION OF CRANE PLACEMENT AND ERECTION PLANS, THE CONTRACTOR SHALL FIELD VERIFY COMMUNICATION WIRES AND OTHER CONDITIONS SHOWN ON PLANS.
- 12. CRANE TO BE MOUNTED LEVEL ON EXTENDED OUTRIGGERS IN FULL CONTACT WITH GROUND SURFACE. COMPACTED CRUSHED STONE OR SAND MAY BE USED TO FILL ANY LOW AREAS FOR LEVELNESS.
- 13. ROAD PLATES UNDER CRANE OUTRIGGERS TO BE GRADE A36 STEEL OR BETTER.
- 14. CRANE POSITIONS MAY BE ADJUSTED TO SUITE FIELD CONDITIONS AS LONG AS MAXIMUM RADIUS VS. LOAD IS NOT EXCEEDED.
- 15. MAXIMUM WIND SPEED AT TIME OF CRANE OPERATION SHALL NOT EXCEED 10 MPH.
- 16. A TABLE OR CHART PREPARED BY THE CRANE MANUFACTURER TO DESCRIBE THE MAXIMUM LIFT AT ALL CONDITIONS OF LOADING SHALL BE POSTED IN CRANE CAB IN CLEAR VIEW OF OPERATOR.
- 17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE WEIGHT OF THE LIFT AND FOR INSURING THE STABILITY OF EACH MEMBER DURING ALL PHASES ERECTION.
- 18. ANCHOR BOLTS FOR TOWER STRUCTURE AND BRIDGE STRUCTURE TO BE INSTALLED AND FASTENED BEFORE THE CRANE SUPPORT CABLES ARE RELEASED.
- ALL RIGGING SLINGS AND COMPONENTS TO HAVE A FACTOR OF SAFETY OF 5.
- 20. CRANE CAPACITY AT THE MAXIMUM OPERATING RADIUS SHALL BE 150% GREATER THAN THE LOAD.
- 21. ALL PERSONNEL SHALL BE AMTRAK SAFETY TRAINED PER THE CONTRACT SPECIFICATIONS.
- 22. AFTER THE PEDESTRIAN BRIDGE IS SET, THE CONTRACTOR SHALL COORDINATE THE INSTALLATIONS OF BRIDGE FINISHES (GLAZING, ROOFING, TOUCH-UP PAINTING) WITH AMTRAK TO OBTAIN THE NECESSARY TRACK CLOSURES.
- 23. TEMPORARY FALL PROTECTION SHOULD BE INSTALLED ON THE BRIDGE AS REQUIRED UNTIL THE FINAL BRIDGE FINISHES ARE COMPLETE.
- 24. COORDINATE THE NECESSARY GROUNDING OF CRANE EQUIPMENT WITH THE ENGINEER AND AMTRAK R.R.

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# **ERECTION SEQUENCE - SUGGESTED DESIGN PROCEDURE:**

- CONSTRUCT NEW PLATFORM FOUNDATION, ELEVATED PLATFORM STRUCTURE AND CANOPIES.
- CONSTRUCT PLATFORM IN ACCORDANCE TO STAGING PLANS.
- UTILIZE SMALLER EQUIPMENT TO ACCESS FROM THE REAR OF THE CONSTRUCTION ACTIVITY TO MINIMIZE DISRUPTION TO RAIL SERVICE.

#### STAIR AND ELEVATOR TOWER CONSTRUCTION

- 1. CONSTRUCT ELEVATOR/STAIR TOWER IN ACCORDANCE TO STAGING PLANS. TOWER STRUCTURE WILL COME ON SITE SHOP ASSEMBLED IN SECTIONS TO GREATEST EXTENT POSSIBLE. ERECTION OF TOWER SECTIONS WILL REQUIRE A TRACK CLOSURE WHICH REQUIRES THE CONTRACTOR TO COORDINATE WITH AMTRAK.
- AFTER TOWER SECTIONS ARE SET, INSTALL INTERMEDIATE FRAMING AND STAIR STRINGERS. WHERE POSSIBLE USE SMALL CRANE OR LIFT TO REDUCE IMPACT ON RAIL SERVICE AND TRACK CLOSURES. IF DESIRED, SET TOP MEMBERS FIRST AND UTILIZE RIGGING AND HOISTS OFF MEMBERS TO SET LOWER FRAME SECTIONS. PROTECT SECTIONS FROM DAMAGE.
- 3. CONTRACTOR TO VERIFY IN FIELD THE DISTANCES BETWEEN THE PEDESTRIAN BRIDGE BEARING PAD LOCATIONS PRIOR TO BEARING NEW BRIDGE ONTO TOWER STEEL FRAME STRUCTURES.

#### PEDESTRIAN BRIDGE OVERPASS CONSTRUCTION

- ERECTION OF PEDESTRIAN BRIDGE WILL REQUIRE TRACK CLOSURE(S). CONTRACTOR TO COORDINATE WITH RAIL AUTHORITIES. CONTRACTOR NEEDS TO BE PREPARED TO RAISE, SET AND SECURE THE BRIDGE SECTION IN A LIMITED TIME FRAME, LIKELY 12AM-4AM ON A WEEKEND.
- 2. THE BRIDGE HAS BEEN DESIGNED FOR EACH SIDE OF THE TRUSS TO BE SHOP FABRICATED IN ONE (1) SECTION AND THEN DELIVERED TO SITE. FLOOR CROSS BRACING AND ROOF RAFTER FRAMING SHALL BE FIELD INSTALLED AS SHOWN ON PLANS. THE CONTRACTOR IS ALLOWED TO SUBMIT ALTERNATE BOLTED CONNECTIONS TO THE ENGINEER FOR APPROVAL, ASSEMBLE BRIDGE ON GROUND (IN AREA SHOWN ON PLAN) TO PREPARE FOR HOISTING, RAISING AND SETTING IN PLACE.
- BRIDGE SECTION IS TO BE RAISED WITH FLOOR SLAB METAL DECK INSTALLED, PREPPED AND READY FOR CONCRETE PLACEMENT AFTER ERECTION.
- BRIDGE SECTION IS TO HAVE A TEMPORARY PLYWOOD COVERING INSTALLED ON THE OUTSIDE WALLS. PLYWOOD IS TO ENCLOSE THE BRIDGE AREA SO THAT WORK CAN PROCEED ON THE INTERIOR FINISHES AND WINDOW SYSTEM AFTER THE BRIDGE SECTION HAS BEEN SET AND SECURED, SO THAT ADDITIONAL RAIL CLOSURES CAN BE AVOIDED. CARE MUST BE TAKEN AS TO NOT DAMAGE THE BRIDGE MEMBERS OR FINISH WITH THE TEMPORARY PLYWOOD COVERING.
- PEDESTRIAN BRIDGE ROOF FRAMING, STEEL ROOF DECK AND ELECTRICAL CONDUITS ARE TO BE DELIVERED TO SITE AND INSTALLED IN STAGING AREA PRIOR TO LIFTING IT IN PLACE.
- ERECTION OF PEDESTRIAN BRIDGE TO BE PERFORMED WITH ALL TRACKS OUT OF SERVICE (TO BE COORDINATED WITH AMTRAK).
- 7. CRANE TO BE SET UP AND PREPARED IN POSITION. HOOK ONTO BRIDGE STRUCTURE USING FOUR-LEG BRIDLE. NOTE, LIFTING SEQUENCE TO BE PROGRAMMED IN ADVANCE ON THE ON-BOARD COMPUTER. CONTRACTOR SHALL POSITION PERSONNEL TO CONTROL THE POSITION, SWING AND ROTATION OF THE BRIDGE THROUGHOUT THE ENTIRE LIFTING PROCEDURE.
- 8. RAISE THE PEDESTRIAN BRIDGE SO THAT THE UNDERSIDE OF THE BRIDGE STRUCTURE CLEARS THE TOP OF THE STAIR/TOWER FRAMING.
- LOWER THE STRUCTURE ONTO THE END BEARINGS AND SECURE USING ANCHOR BOLTS BEFORE RELEASING THE LOAD.
- 10. ALL BEARING POINTS MUST BE MADE SECURE PRIOR TO RELEASE OF TRACK OUTAGE.

# WRAP UP AND COMPLETE CONSTRUCTION

- COMPLETE THE INSTALLATION AND RELATED ELECTRICAL WORK FOR THE ELEVATORS, SITE LIGHTING, PLATFORM LIGHTING, AND CANOPY LIGHTING.
- COMPLETE THE GLAZING AND ALL RELATED FINISH WORK FOR THE PEDESTRIAN BRIDGE AND ELEVATOR SYSTEMS.
- COMPLETE THE PUNCH LIST WORK.
- REMOVE THE TEMPORARY CONSTRUCTION FACILITIES. CLEAN UP THE SITE AND PREPARE FOR OWNER ACCEPTANCE AND PUBLIC USE OF THE NEW TRAIN FACILITY.

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**BERLIN** 

**ERECTION SEQUENCE 1** 

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